No. 616,377. Patented Dec. 20, 1898.

A. WAUTERS.

DIAMOND POLISHING MACHINE.

(Application filed June 8, 1896.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1,

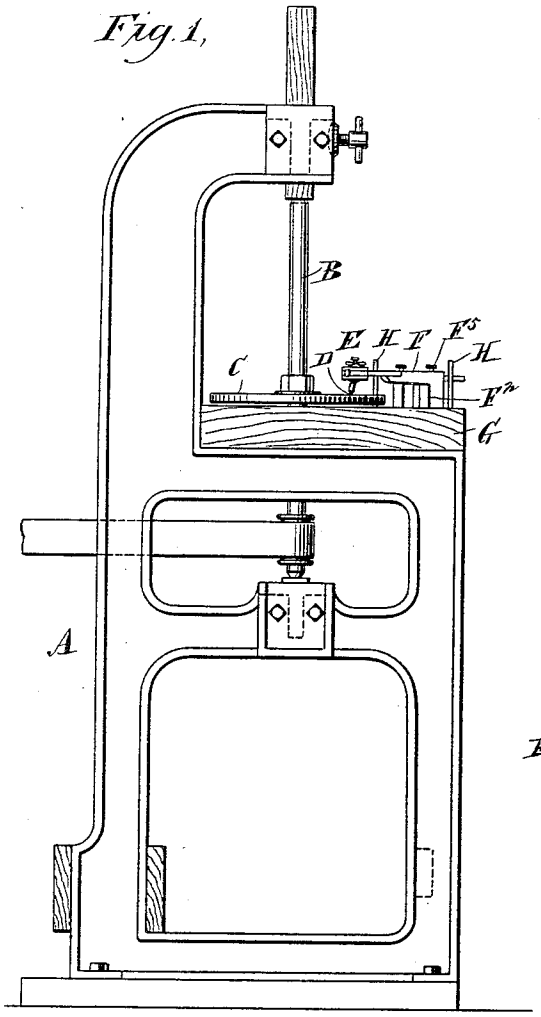


Fig. 2,

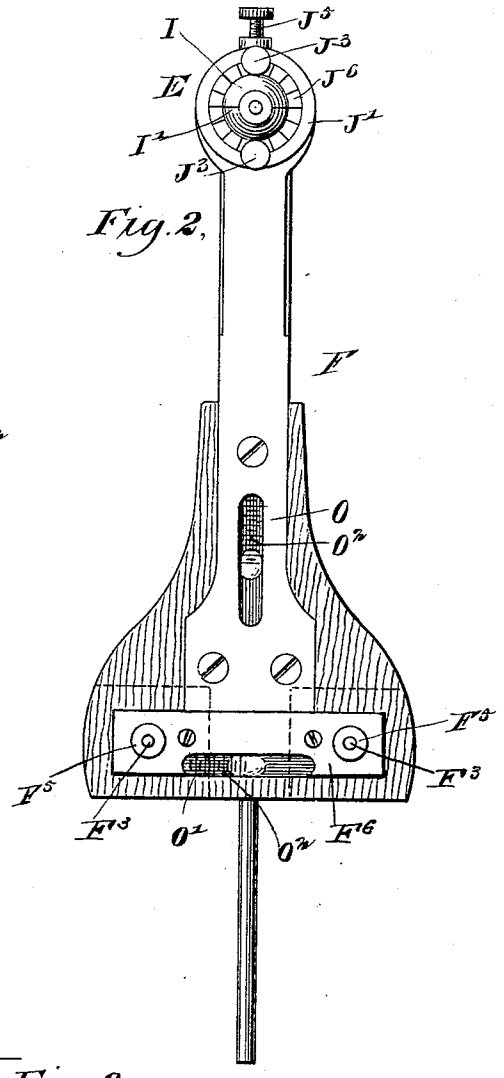


Fig. 3,

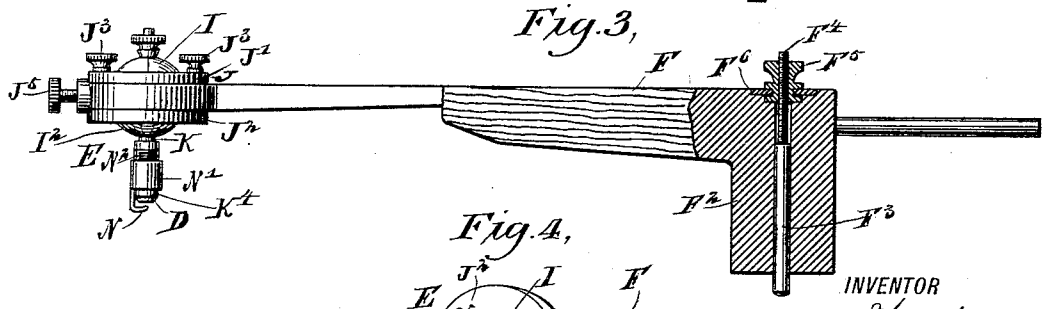
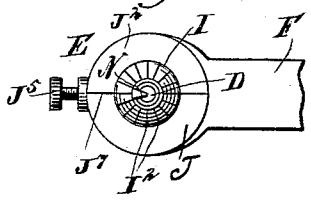


Fig. 4,



WITNESSES:

Edward Thorpe.

Thos. J. Hoskins.

INVENTOR

A. Wauters

BY

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 616,377. - Patented Dec. 20, 1898.

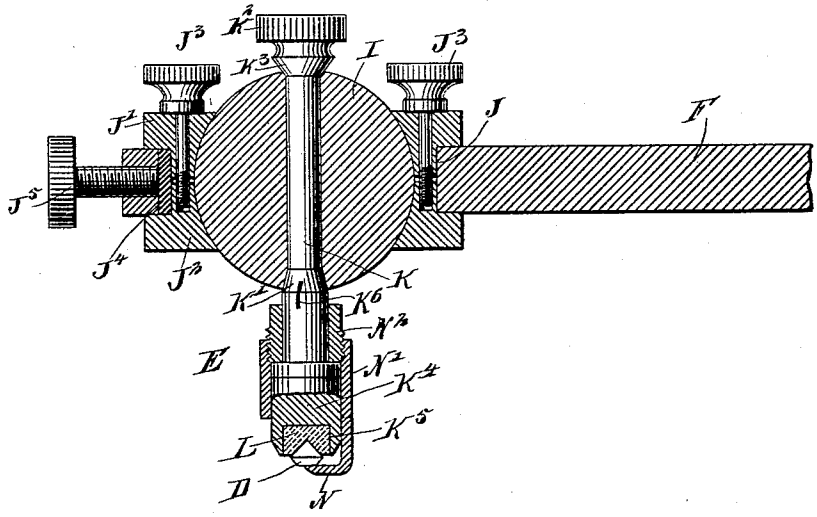
A. WAUTERS.

DIAMOND POLISHING MACHINE.

(Application filed June 8, 1896.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 5,



WITNESSES:

Edward Thorpe.

Wm. J. Hoskins.

INVENTOR

A. Wauters.

Munn & Co.

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

AUGUST WAUTERS, OF NEW YORK, N. Y.

DIAMOND-POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 616,377, dated December 20, 1898.

Application filed June 8, 1898. Serial No. 594,677. (No model.)

To all whom it may concern:

Be it known that I, AUGUST WAUTERS, a subject of the King of Belgium, residing in New York, (Brooklyn,) in the county of Kings and State of New York, have invented a new and Improved Diamond-Polishing Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved diamond-polishing machine which is simple and durable in construction and arranged to permit of adjusting the dop according to the desired number of facets to be formed on the diamond and to insure a proper polishing relative to the desired inclination to be given to the facets and relative to the grain of the diamond to the rubbing-surface of the wheel.

The invention consists principally of a dop provided with a ball-and-socket joint, of which one is adapted to carry the diamond to be polished and the other is adjustably held in the supporting-arm.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the complete machine. Fig. 2 is a plan view of the supporting-arm and dop. Fig. 3 is a side elevation of the same, with part in section. Fig. 4 is an inverted plan view of part of the same. Fig. 5 is an enlarged sectional side elevation of the dop and part of the supporting-arm.

The improved diamond-polishing machine or mill is mounted on a suitably-constructed frame A, in which is journaled a vertically-disposed shaft B, carrying the wheel or lap C, against the top surface of which is held the diamond D to be polished.

The diamond D is supported by a dop E, held in the free end of a supporting-arm F, resting on a table or bench G, supported on the frame A and with its top surface slightly below the top surface of the wheel C. The dop E is provided with a ball I, mounted to turn in a socket J, held rotatably in the free end of the supporting-arm F, the said socket being preferably made of two parts J′ and J^2, formed with flanges engaging the top and bottom surfaces of the supporting-arm F, as plainly shown in Fig. 5.

The two parts J′ and J^2 of the socket are connected with each other by clamping-screws J^3, which when screwed up serve to securely clamp the ball I in the socket parts J′ and J^2. When the screws J^3 are loosened, then the ball I can be readily turned in the socket J, according to the inclination desired to be given to the facet to be cut on the diamond, as hereinafter more fully explained.

The socket J is mounted to turn in the supporting-arm F and is adapted to be fastened therein by a peripheral clamping-plate J^4, held in a recess in the supporting-arm F and secured against the periphery of the socket by a set-screw J^5, screwing in the arm F. This clamping-plate J^4 acts as a gib and is simply recessed in the plate.

Now it will be seen that by the arrangement described the ball I will be turned in the socket J and then fastened therein when the desired position is reached, and the socket J can be turned in the supporting-arm F and then fastened in place by the set-screw J^5 and clamping-plate J^4 to hold the several parts in a fixed position relative to the supporting-arm.

The ball I is formed with a diametrical bore in which is fitted to turn a spindle K, formed at its lower end with a conical shoulder K′, adapted to engage a corresponding mouth at the lower end of the bore, and on the upper end of the said spindle K screws a nut K^2, formed with a conical base K^3, likewise engaging a conical mouth on the upper end of the said bore.

Now when the nut K^2 is screwed up the spindle K is securely clamped in place in the ball I, and when the said nut is loosened it permits the operator to readily turn the spindle in the diametrical bore of the ball. The lower end of the spindle K is formed with a head K^4, having in its bottom a recess K^5, adapted to receive a fastening substance L, such as cement, in which is embedded part of the diamond D, the said cement being placed in the recess while in a plastic state, and the diamond is set in the said material so that on the drying of the latter the dia-

mond is securely fastened in place on the head K^4.

In order to securely hold the diamond in place, I provide a foot N, adapted to engage with its free end a table or a facet already formed on the side of the diamond, the said foot projecting from a sleeve N′, fitted loosely on the head K^4. The upper end of the said sleeve is formed with an internal thread engaged by the nut N^2, fitted loosely on the spindle K and abutting with its inner end on the top surface of the head K^4, so that when the said nut is screwed up it draws the sleeve N′ upward to cause the foot N to firmly engage the table or facet of the diamond. Thus the diamond D is held in place by the fastening substance and the foot N to resist the polishing action of the moving surface of the wheel C during the operation of polishing the diamond.

In order to accurately set the ball I relative to the socket J, I provide the top socket part J′ with a graduation J^6, which indicates the meridian line I′, formed on the ball I, the said line passing through the center of the spindle K, as indicated in Fig. 2.

The graduation J^6 is divided into, say, sixteen equal parts to permit of readily adjusting the ball according to the number of facets desired to be given to the stone, it being understood that the ball is shifted in the socket J to move the line I′ to the successive marks on the graduation J^6.

On the under side of the ball I is formed a meridian graduation I^2, intersecting in the center of the spindle K, so that the latter passes through the poles of the two graduations I′ and I^2. On this meridian graduation I^2 indicates a longitudinal line K^6, formed on the spindle K, (see Fig. 5,) to permit the operator on loosening the nut N^2 to turn the spindle K in the fixed ball I, to change the position of the diamond D relative to the grinding-surface, to divide in equal parts, and to polish a new facet without adjusting the ball I in the socket J, as previously explained.

In order to bring the grain of the diamond in proper relation to the surface of the wheel C, the operator loosens the set-screw J^5 and turns the socket J, and with it the ball I and spindle K, until the grain of the diamond is in the proper position relative to the moving surface of the rotating wheel C. The set-screw J^5 is then screwed up to again clamp the socket J in place on the arm F. Thus by the arrangement described the operator is enabled to accurately set the diamond to the inclination of the facet to be polished, to move the stone to the proper position according to the grain of the diamond, and to readily turn the diamond to accurately produce the desired number of facets on the stone.

It will further be seen that if it is desired to polish diamonds more according to weight instead of to the regularity of facets the operator is enabled to readily make such adjustment of the spindle K and ball I to produce the desired result—that is, to polish the stone according to its shape, so as not to lose any of its weight, the inaccuracy of its facets thus produced being so slight as to be hardly noticeable.

In order to permit the operator to adjust the supporting-arm F vertically, I provide the base F^2 of the said arm with two pins F^3, disposed vertically and fitted to slide in the sides of the said base. The upper threaded ends F^4 of the said pins F^3 are engaged by nuts F^5, mounted to turn in a plate F^6, secured to the supporting-arm at the top thereof, as plainly indicated in Fig. 3. The lower ends of the pin F^3 project below the bottom of the base, so as to rest on top of the table G, and by the operator turning either or both of the nuts F^5 he can raise and lower the supporting-arm vertically, according to the position of the diamond relative to the moving surface of the wheel C.

In order to indicate the depth of the polishing done on the stone, I provide the supporting-arm F with two spirit-levels O and O′, of which the spirit-level O extends longitudinally on the arm and the other extends transversely of the base, as plainly shown in Fig. 2. Each of the spirit-levels is provided with a graduation O^2 to indicate the position of the bubble, which shifts from a level position according to the amount of material taken off the stone by the wheel C. Thus it will be seen that by the arrangement described the operator can readily adjust the dop as to the inclination of the facet, then for the grain, and finally for the number of facets to be given to the stone.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a gem-polishing machine, the combination with a supporting-arm, of a socket mounted to turn in said arm, means for securing the socket in the arm, a ball capable of turning in the socket, means for fastening the ball in the socket, a spindle extending centrally through the ball and capable of turning therein, means for fastening the spindle to the ball, and a gem-holder carried by said spindle, substantially as shown and described.

2. In a dop for diamond-polishing machines, the combination of a ball having a central hole which is formed with a conical seat at each end, a spindle provided with a recessed head for holding the diamond and its cementing material and having a conical step adapted to fit one of the conical seats in the ball, a cone-faced locking-nut on the opposite end with a foot adapted to engage the diamond, and means for adjusting and securing the same to the head, substantially as described.

AUGUST WAUTERS.

Witnesses:
THEO. G. HOSTER,
JNO. M. RITTER.