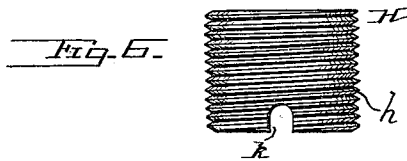
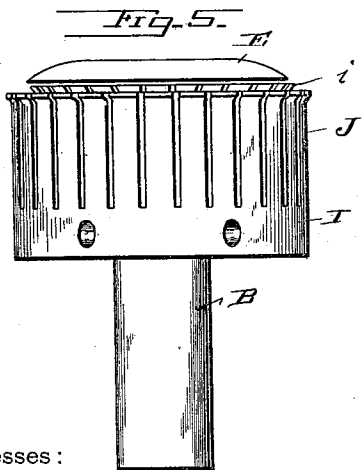
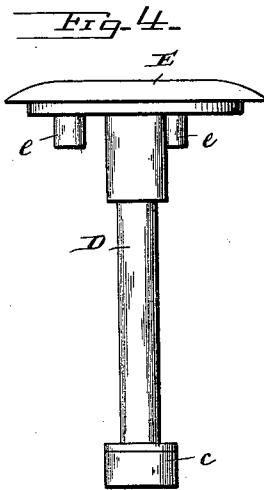
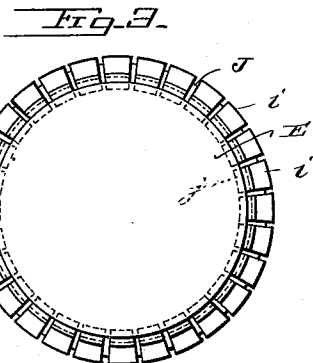
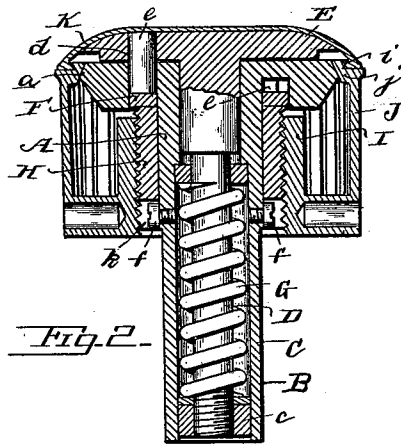
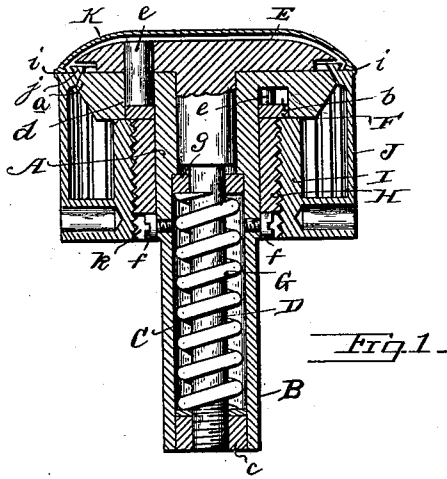


F. MINK.
ENGRAVER'S CHUCK.

No. 520,797.

Patented June 5, 1894.



Witnesses:

Jesse B. Heller,
Wm. M. ...

Inventor.

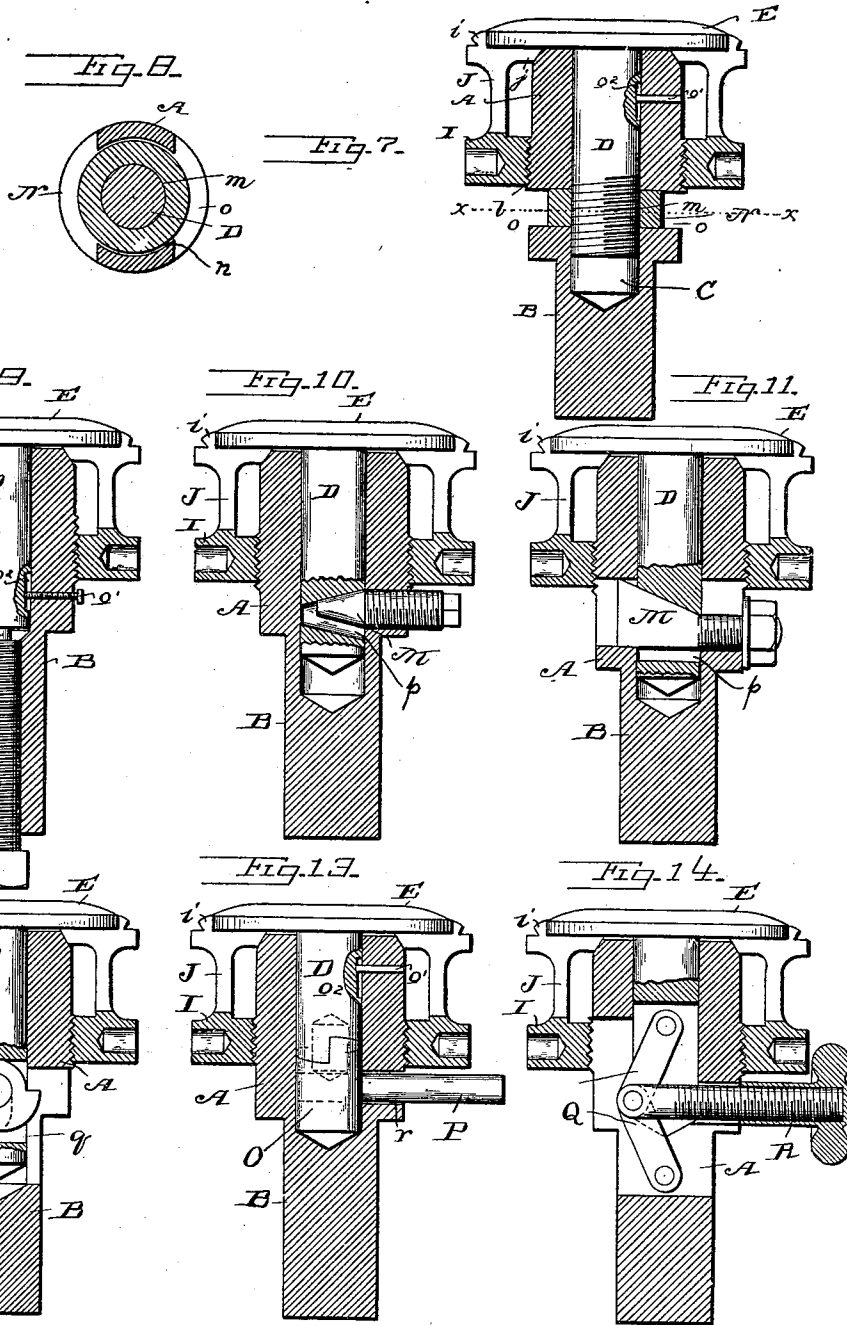
Fritz Mink,
By his attorney

[Signature]
Attorney.

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No. 520,797.

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Witnesses:

Jesse B. Heller
Samuel Marshall Hubbs

Inventor.

Fritz Mink
 By his attorney,
Wm. H. ...
 Attorney.

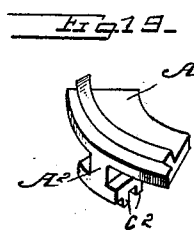
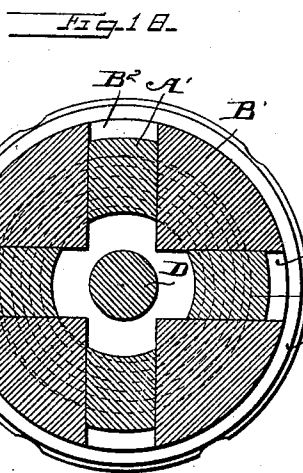
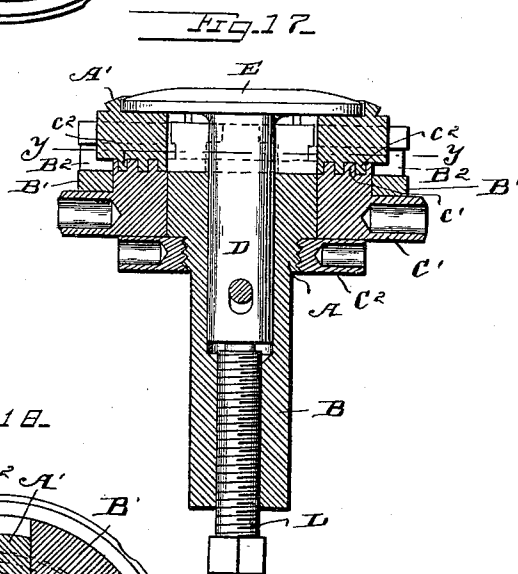
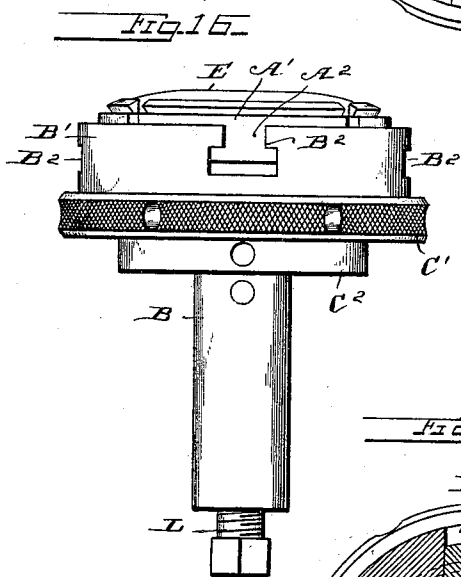
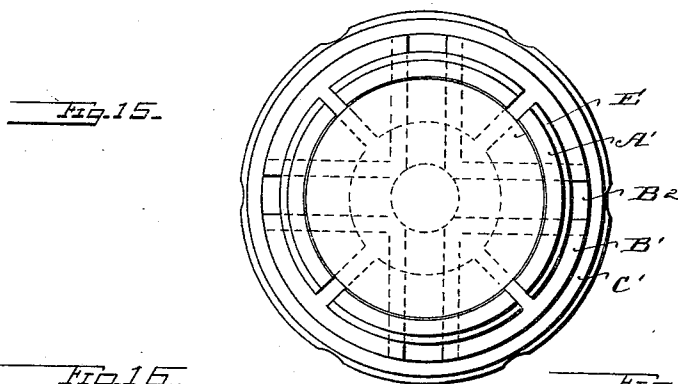
(No Model.)

4 Sheets—Sheet 3.

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Witnesses:

Jesse B. Heller
Samuel M. ...

Inventor.

Fritz Mink
 By his attorney,
...
 Attorney.

UNITED STATES PATENT OFFICE.

FRITZ MINK, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
KEYSTONE WATCH CASE COMPANY, OF SAME PLACE.

ENGRAVER'S CHUCK.

SPECIFICATION forming part of Letters Patent No. 520,797, dated June 5, 1894.

Application filed May 22, 1893. Serial No. 475,135. (No model.)

To all whom it may concern:

Be it known that I, FRITZ MINK, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Engravers' Chucks, of which the following is a specification.

My invention relates to engravers' chucks, and consists of certain improvements which are fully set forth in the following specification and are shown in the accompanying drawings.

My invention relates particularly to chucks for clamping and holding a watch case back, cover, bezel or other object, so that it may be operated upon by an engraving, knurling or ornamental tool.

While my invention is particularly intended for clamping and holding watch case covers and backs while they are being engraved or ornamented, it is not limited to such use, but may be employed with other objects and for other purposes.

My invention is concerned only with the devices for clamping and holding the object to be operated upon, and is not concerned with the knurling, ornamenting, or engraving operations or with the devices therefor.

It is the object of my invention to firmly clamp the object to be ornamented or engraved, and at the same time to suitably brace and support it throughout, so that a firm and unyielding surface may be presented to the operating tool.

The chuck may be used either as a stationary support for the object, or it may be applied to the spindle of a mandrel and rotated according to the character of the work to be done.

I shall now refer to the accompanying drawings for the purpose of particularly explaining the construction and operation of my improved chuck.

Figure 1 is a longitudinal vertical sectional view of an engraver's chuck embodying my invention. Fig. 2 is a similar view of the same showing the chuck clamping and supporting a watch case back or cover. Fig. 3 is a plan view of the chuck. Fig. 4 is a side elevation of the supporting head and plunger. Fig. 5 is a side elevation of the chuck.

Fig. 6 is a side elevation of one of the parts. Fig. 7 is a longitudinal vertical sectional view of a chuck embodying my invention and illustrating a modification. Fig. 8 is a transverse sectional view of the same on the line $x-x$ of Fig. 7. Figs. 9, 10, 11, 12, 13 and 14 are longitudinal vertical sectional views of chucks illustrating modifications of my invention. Fig. 15 is a plan view of a chuck embodying another modification of my invention. Fig. 16 is a side elevation of the same. Fig. 17 is a vertical sectional view of the same. Fig. 18 is a horizontal sectional view on the line $y-y$ of Fig. 17. Fig. 19 is a perspective view of one of the detached clamping pieces of the chuck. Fig. 20 is a plan view of a chuck embodying another modification of my invention. Fig. 21 is a side elevation of the same. Fig. 22 is a vertical sectional view of the same. Fig. 23 is a horizontal sectional view on the line $z-z$ of Fig. 22.

I shall first refer particularly to the construction shown in Figs. 1 to 6.

A is the body or stationary portion of the chuck which may be provided with a stem or shank B adapted to be clamped in a vise or received in the mandrel of a lathe in accordance with the manner in which the chuck is to be used.

The upper portion of the body A projects out laterally and is provided with an annular beveled edge a . The body A is provided with a central longitudinal recess C preferably extending through the stem or shank B, in which is located a movable plunger or rod D. The plunger or rod D is provided with a head or plate E, which is located over the extended head of the body A and constitutes the supporting piece for the back of the object carried by the chuck. The outer surface of the head or plate E may be curved or shaped to correspond with the internal surface of the watch case cover or other object which it is to support.

The head or plate E is provided with pins or lugs e which extend through holes d in the head of the body A, into an annular recess b in the lower surface of the head where they rest upon a ring piece F.

G is a spring acting upon the plunger or

rod D to normally retract it and hold the plate E upon the head of the body A as is shown in Fig. 1. The front end of the spring G is shown resting against a stationary nut *g* within the recess C, and the rear end is shown bearing against a nut *c* carried by the end of the plunger or rod D.

H is the tubular piece surrounding the body A and having its upper edge below the ring piece F. This tubular piece H is provided externally with screw threads *h*.

I is an annular piece provided with internal screw threads adapted to engage the threads *h* of the tubular piece H and having its upper portions split longitudinally to form a series of spring tongues J which are located about the head of the body A. These tongues J are provided with internal beveled faces *j* which rest upon the annular beveled edge *a* of the head of the body A, and are provided externally with undercut notches *i*, which form an annular undercut clamping notch to fit under the edge of the object to be clamped.

The annular piece I which carries the spring clamping tongues J is adapted to be screwed on the ring piece H. The ring piece may be held against rearward movement upon the body A by pins or screws *f* extending through notches *k* in the lower edge of the tubular piece H into the body A. By this construction the piece H may move forward upon the body A but is held against rearward movement.

K is the watch case cover, or other object to be clamped.

I shall now explain the operation of the apparatus. Normally the plunger D is retracted by the spring G and the plate or head E is in the position shown in Fig. 1 resting upon the head of the body A. The piece I is screwed forward to its highest position so that beveled edges *j* of the spring tongues are moved forward on the annular beveled edge *a* thus permitting the spring tongues to contract. The watch case cover K is then placed loosely upon the end of the piece I with its undercut edge beyond the notches *i* of the contracted spring tongues J as is shown in Fig. 1. The piece I is now screwed rearwardly on the piece H and as its spring tongue pieces J are moved back the beveled edges *j* thereof are moved down upon the annular beveled edge *a* of the stationary body. This expands the spring tongues J so that the undercut notches thereof engage the rim or undercut edge of the cover K and thus clamp it securely. When the rim of the cover K is thus securely clamped, the spring tongues J are held from further expansion and therefore cannot move farther upon the beveled edge *a* so that the piece I is held against further rearward movement. As it is screwed upon the tubular piece H, however, and as the latter is free to move forward, the instant the rearward movement of the piece I ceases the piece H moves forward and raises the ring F in the recess *b*. The ring F acting upon the pins *e* elevates

the plate E and presses it against the inner surface of the back K thus firmly bracing and supporting the back, while it is acted upon by the engraving or ornamenting tool. The forward movement of the piece H takes place whenever the resistance to the rearward movement of the piece I due to the clamping of the rim of the cover or back K, becomes greater than the tension of the spring G, and this may be regulated by adjusting the tension of the spring G. For this purpose the nut *c* upon which the rear end of the spring G rests, may be threaded on the end of the rod D, so that by screwing the nut in or out on the end of the rod the tension of the spring G may be regulated. To unclamp the cover K the clamping piece I is screwed forward so that the spring tongues J may contract and release the rim of the cover.

This construction which I have described, it will be observed, is one in which the movement is imparted to the back supporting plate E by the continuous act of screwing the clamping ring I. The plate E may, however, be moved forward independently of the movement of the ring I and in the modifications shown in Figs. 7 to 23, such constructions are illustrated.

In the construction shown in Figs. 7 and 8 the body A provided with the annular beveled edge *a* and the clamping piece I with the spring tongues J having the external clamping edges *i* and the internal beveled edges *j* acting on the beveled edge *a* of the body A are employed as in the construction previously described, but the ring I is screwed directly to the body A which is provided with external screw threads *l* for that purpose. The operation of the spring tongues J in clamping and unclamping the edge of the watch case cover is the same as in the former construction, the piece I being screwed upon the body A. The plunger or rod D which carries the head E extends into the recess C in the body A but is provided with external threads *m*. N is an internally threaded nut located within an enlargement or recess *n* in the body A and engaging the external threads *m* of the rod D, so that by turning the nut N the rod D and plate E may be moved forward or back. The sides of the body A adjacent to the recess *n* may be cut away as shown at *o* to allow access to the nut N. To prevent the plunger D and its head E from turning when it is moved by the nut N, a pin *o'* may be employed carried by the body A and projecting into a longitudinal groove *o''* in the plunger D.

In Fig. 9 a construction is shown in which the plunger D is operated from the rear by a screw L extending through the stem B and acting on the end of the plunger.

In Figs. 10 and 11 the rear of the plunger D is formed with a cam recess *p* into which a movable cam piece M carried by the body A extends so that when the cam is moved it

will act upon the plunger and move it. In Fig. 12 is shown a rotary cam N located in a recess q in the plunger.

In Fig. 13 I have shown a construction in which the rear end of the plunger is divided with two opposed cam faces in the line of division and the lower portion O is adapted to be turned by a rod or pin P projecting through a slot r in the side of the body A so that when the lower portion O is turned the plunger D will be moved by the action of the opposed cam faces.

In Fig. 14 is shown a construction in which the rear end of the plunger is connected with the body A by toggle levers Q operated by a movable rod or pin R extending through the body A.

In the modification shown in Figs. 15, 16, 17, 18 and 19 instead of the clamping piece I provided with the spring fingers J, I employ a series of separate clamping pieces A' provided with the proper external undercut clamping edges. These pieces are provided with extensions A² by which they are carried and guided in radial guideways B² in the upper portions B' of the body A. Located below the portion B' and supported loosely on the body A of the chuck so as to be free to be turned about it is a ring C' which is provided on its upper face with a spiral groove or thread c' which engages lugs c^2 on the base of the extensions A² of the pieces A' so that when the ring C' is turned the spiral groove c' thereof acting on the lugs of the pieces A' will move the pieces A' in or out in the guideways B² thus expanding or contracting the clamping edges of the pieces A'. The ring piece C' may be supported upon the body A by a nut C². In this construction the plunger D and head E may be moved in any suitable manner. In the drawings I have shown it adapted to be operated by the screw L as in the construction shown in Fig. 9.

In the modification shown in Figs. 20, 21, 22 and 23 a different construction of clamping devices is shown. The body A is provided with the shank B as in the other cases, and the plunger D extends through the body and carries the head E. The plunger may be operated in any convenient manner, and for the purposes of illustration I have shown the shank B provided with the screw L as in the construction shown in Fig. 9 and in Figs. 16 and 17. The body A is provided with external threads and with a series of longitudinal recesses A³ which extend through the screw threaded portion. D' is a series of independent clamping pieces provided with the external under cut clamping edges and located in the recesses A³ of the body A. D² is an internally threaded ring adapted to be screwed upon the externally threaded portion of the body. This ring is provided with an internal annular groove d' which receives external lugs d^2 on the pieces D' so that when the ring D² is screwed up or down upon the body A it will carry the pieces D' with it,

thus moving them up or down also. To cause the pieces D' to be expanded or contracted during these movements, the upper edge of the body A is provided with tapered faces a' corresponding to the tapered edge a of the constructions shown in Figs. 1 to 14 and the upper portions of the pieces D' are provided with tapered portions j' which rest upon the faces a' . The lower edges of the recessed portions of the body A are similarly provided with tapered faces a^2 and the lower portions of the pieces D' with tapered portions j^2 when the pieces D' are moved up or down these tapered edges a' and a^2 of the body A acting on the tapered portions j' and j^2 of the pieces D' will rock them and thus cause the clamping edges to expand or contract. The pieces D' may be provided with rounded bearing projections d^3 which rest against the face of the body A and thus permit the pieces D' to rock when they are acted upon by the tapered faces a' , a^2 .

While I prefer the minor details of construction shown I do not limit my invention to them, as it is apparent that they may be modified in various ways without departing from the invention, the essential feature of which is the combination with a clamping piece which holds the object of the movable back supporting piece which bears against the back of the clamped object and thus supports it while its upper surface is acted upon by the engraving or ornamenting tool.

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

1. An engraver's chuck for holding the covers and backs of watch cases, consisting of a clamping piece having a series of spring clamping portions arranged in a circle and provided with notched or undercut edges adapted to engage and hold the edge of the cover or back, and a movable bracing plate located within the spring clamping piece and adapted to be moved in contact with the under surface of the cover or back to brace it while held by the clamping piece, independently of any clamping action.

2. A chuck consisting of an outer clamping portion having an external spring clamping edge, and a back supporting piece located within the outer clamping portion and movable longitudinally with reference thereto to brace the back of the object to be supported by the spring clamping edge.

3. A chuck consisting of a main body portion, an outer clamping portion carried by the body portion and movable thereon and having an external expansible clamping edge, and a back supporting piece carried by the main body portion, located within the outer clamping portion and movable longitudinally with reference thereto.

4. A chuck consisting of a main body portion, an outer clamping portion carried by the body portion and movable thereon and having a spring clamping edge, said body

- portion and outer clamping portion being provided with opposed inclined faces whereby the spring clamping edge of the clamping portion is operated when said clamping portion is moved on the main body portion, and a back supporting piece carried by the main body portion located within the outer clamping portion and movable longitudinally with reference thereto.
5. A chuck consisting of an outer clamping piece having an external expansible clamping edge, means to expand the clamping edge, and a back supporting piece located within the outer clamping portion and movable longitudinally with reference to the outer clamping portion.
6. A chuck consisting of a stationary body portion provided with an annular beveled edge, an outer clamping portion carried by the stationary body and movable longitudinally with reference thereto, provided with spring clamping pieces having beveled portions resting on the beveled edge of the stationary body, and an adjustable back supporting piece carried by the stationary body and located within the spring clamping piece of the clamping portion.
7. A chuck consisting of a stationary body portion provided with an annular beveled edge, an outer clamping portion carried by the stationary body and movable longitudinally with reference thereto, provided with spring clamping pieces having beveled portions resting on the beveled edge of the stationary body and a movable back supporting piece carried by the stationary body and located within the spring clamping piece of the clamping portion, and means to positively move the back supporting piece.
8. A chuck consisting of a stationary body A provided with an annular beveled edge α , an outer clamping portion I carried by the body A and movable longitudinally thereon, having spring clamping tongues J provided with beveled portions resting on the beveled edge α of the body, and movable back supporting plate E carried by the stationary body and located within the spring tongues J.
9. A chuck consisting of a stationary body A provided with an annular beveled edge α , an outer clamping portion I carried by the body A and movable longitudinally thereon, having spring clamping tongues J provided with beveled portions resting on the beveled edge α of the body, a movable back supporting plate E carried by the stationary body and located within the spring tongues J, and provided with a rod D extending into the stationary body, and means to actuate the rod D and plate E.
10. A chuck consisting of a stationary body A provided with an annular beveled edge α , an outer clamping portion I carried by the body A and movable longitudinally thereon, having spring clamping tongues J provided with beveled portions resting on the beveled edge α of the body, a movable back supporting plate E carried by the stationary body and located within the spring tongues J; and provided with a rod D extending into the stationary body and a threaded nut N carried by the rod D for actuating it.
11. An engraver's chuck for holding objects while they are being engraved or ornamented, consisting of a clamping piece having an external clamping edge adapted to hold the object to be clamped, and a movable supporting piece located within the clamping piece and adapted to be moved in contact with the under surface of the object carried by the clamping piece.
12. A chuck consisting of an outer expansible clamping portion, provided with an external clamping edge and a back supporting piece located within the outer clamping portion and movable longitudinally with reference thereto to brace the back of the object held by the clamping edge.
13. An engraver's chuck for holding the covers and backs of watch cases, consisting of a clamping piece having a series of movable clamping portions arranged in a circle and provided with notched or undercut edges adapted to engage and hold the edge of the cover or back, and a bracing plate located within the clamping portions of the clamping piece and movable longitudinally so that it may be brought in contact with the back of the cover to brace it against the action of the tool wholly independent of any clamping action.
- In testimony of which invention I have hereunto set my hand.
- FRITZ MINK.
- Witnesses:
H. M. KAIN,
C. H. HALL.