(No Model.) 2 Sheets—Sheet 1.

C. F. FULMER & W. E. KELVIE.

LATHE CHUCK.

No. 455,195. Patented June 30, 1891.

Fig 1

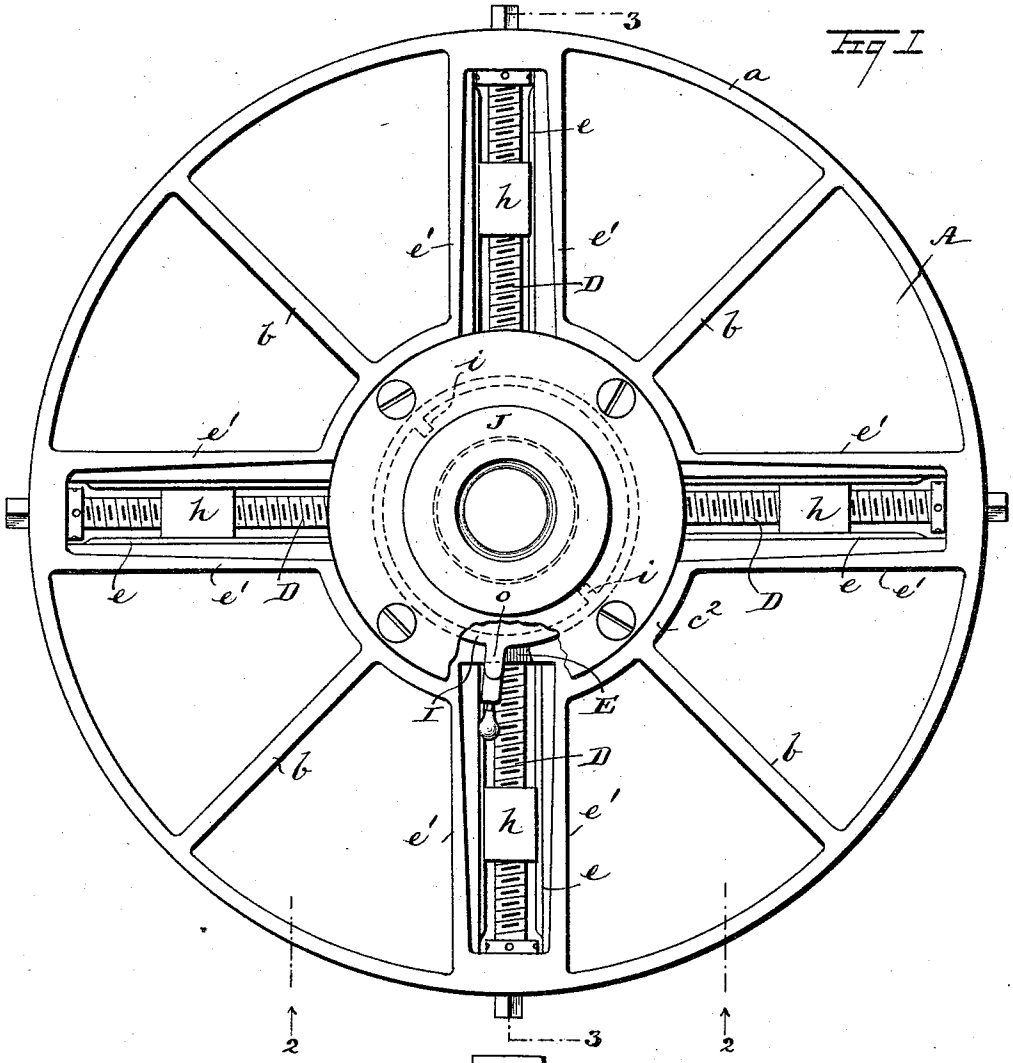
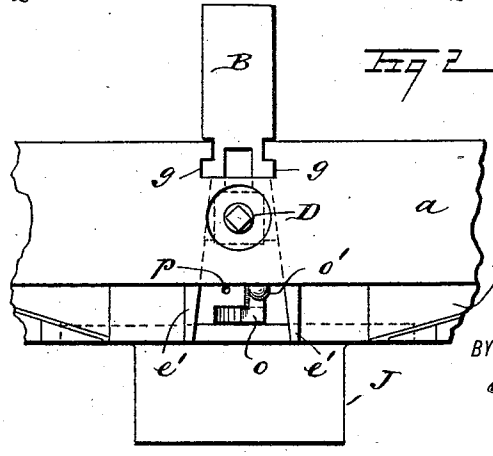


Fig 2



WITNESSES:
H. Walker
C. Sedgwick

INVENTOR:
C. F. Fulmer
BY W. E. Kelvie
Munn & Co
ATTORNEYS

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

(No Model.) 2 Sheets—Sheet 2.

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Fig 3

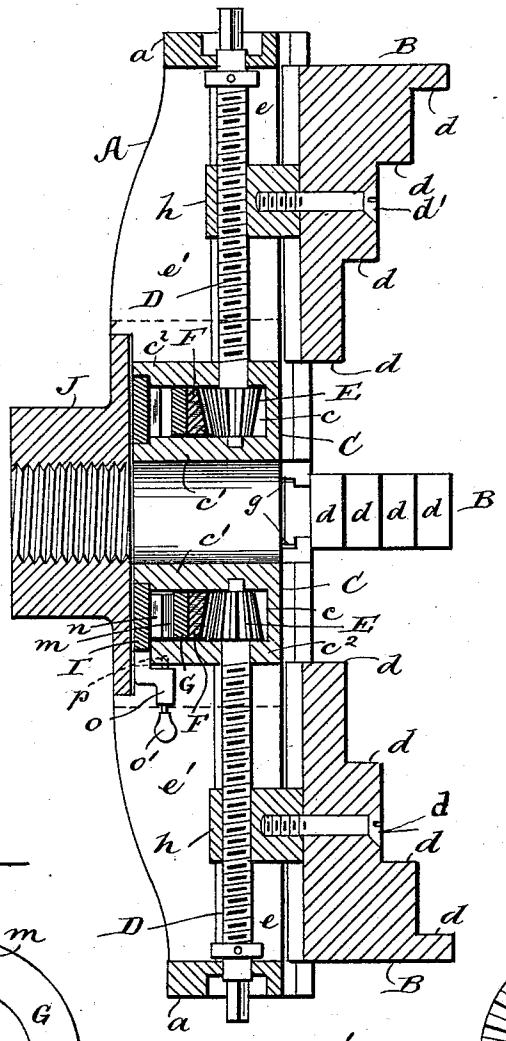


Fig 5

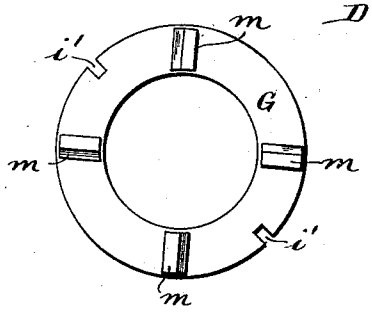
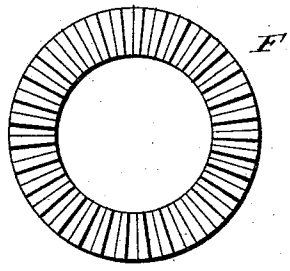


Fig 6



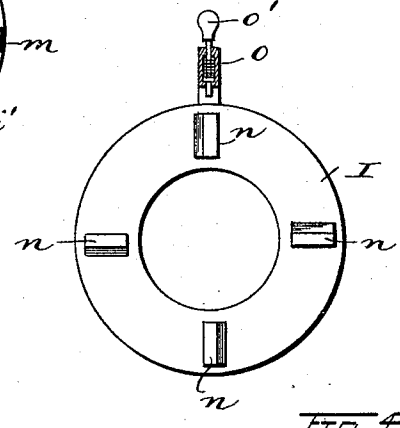


Fig 4

WITNESSES:

H. Walker

C. Sedgwick

INVENTOR:

C. F. Fulmer

W. E. Kelvie

BY Munn & Co

ATTORNEYS

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

UNITED STATES PATENT OFFICE.

CHARLES F. FULMER AND WILLIAM E. KELVIE, OF PLAINFIELD, NEW JERSEY.

LATHE-CHUCK.

SPECIFICATION forming part of Letters Patent No. 455,195, dated June 30, 1891.

Application filed December 18, 1890. Serial No. 375,066. (No model.)

To all whom it may concern:

Be it known that we, CHARLES F. FULMER and WILLIAM E. KELVIE, both of Plainfield, in the county of Union and State of New Jersey, have invented a new and useful Lathe-Chuck, of which the following is a full, clear, and exact description.

The objects of this invention are to provide a simple, durable, and convenient device of the class indicated which will afford means to grip articles of a regular contour or pieces which are of an irregular form.

To these ends our invention consists in the construction of the chuck so that its jaws may be simultaneously moved or each jaw separately adjusted; and it further consists in the peculiar construction and combination of the parts, as is hereinafter described and claimed.

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

Figure 1 is a rear view of the chuck with the hub-plate broken away, showing a locking-lever in place. Fig. 2 is an edge view of that part of the device embraced between the lines 2 2 in Fig. 1. Fig. 3 is an axial transverse section taken on the line 3 3 in Fig. 1. Figs. 4, 5, and 6 are detached views of important details embodying features of the invention.

The face-plate A of the chuck is circular and of any desired size that will be most convenient for its service.

To render the face-plate A strong and capable of resisting strains it is subjected to in use, a proper number of radial braces *b* are provided, which extend from a circular flange c^2, located near the center of the face-plate on its rear side to intersect a circumferential rearwardly-projecting flange *a*, all being cast integral with the plate.

There are four radial slots *e* cut through the face-place A oppositely in pairs and evenly spaced apart, which have rearwardly-extending flanges *e'* formed on their edges. The slots *e* are each rendered true and parallel on opposite edges to adapt them to receive the jaws B and permit them to slide throughout the extent of the slots, there being a single jaw for each slot furnished with T-shaped integral guide-ribs *g*, which fit mating grooves cut in the sides of the slots in the body of the face-plate A, thus providing an interlocking engagement of the jaws with the face-plate, which will allow the jaws to move in the slots without rattle, and as this engagement of parts extends throughout the length of each jaw, as shown in Fig. 3, great strength is afforded at the points of sliding connection, which will resist the longitudinal rocking strain that has a tendency to lift the inner ends of the jaws.

There is an integral center hub C formed on the face-plate A, which is concentrically grooved a proper depth from the rear side of the plate, thus dividing the hub into two concentric flanges c' c^2 as far as the groove *c* extends in the hub, said groove receiving parts which will be described.

The jaws B are of the usual form on their outer faces, being cut into steps *d*, that afford means to grip and hold pieces of work of different sizes. These steps may be of any desired number proportioned to the capacity of the chuck. Each jaw B is furnished with a nut *h*, which extends at right angles therefrom on the side that engages the face-plate A. Said nuts, being fitted into the slots *e* when the parts are assembled, may be integral portions of the jaws B or be formed separately and secured thereto, as shown in Fig. 3, by a screw *d'*, which will permit the jaws to be reversed endwise and hold material by their outward movement. The nuts *h* are perforated and threaded to receive the adjusting-screws D, which are of similar form, and each screw, fitting its respective nut without looseness, extends from the peripheral flange *a* to the flange c^2, which flanges are perforated in radial alignment to receive the journal ends of the screws. The inner end portion of each screw D extends across the groove *c* in the hub C and has its reduced end stepped into a socket formed in the flange *c'*, as shown in Fig. 3, a bevel-pinion E being mounted on and secured to the portion of each screw-body that is located in the groove *c*, the outer end portions of the screws being journaled to rotate

within the perforations of the peripheral flange *a*, a counterbored socket-hole being formed around the projecting end of each screw, which ends are squared to receive a wrench (not shown) that will fit thereon and within the counterbores.

The ring F (shown detached in Fig. 6) is furnished with radial teeth on one face, which are beveled and cut to mesh with the bevel-pinions E when the ring is seated in the groove *c* adjacent to the pinions, said gear-ring being introduced within the groove from the rear side of the face-plate A.

Upon the gear-ring F a cam-ring G is loosely imposed, which is keyed to the grooved hub C, as shown by dotted lines in Fig. 1, projecting keys *i* at opposite points entering notches *i'* in the cam-ring, so as to prevent it from revolving. Upon the side of the ring G which is not in contact with the ring F four similar cam projections *m* are formed, which are equal distances apart and slope in the same direction.

The rear edge of the concentric flange c^2 is cut away on the inner edge to form a seat for the cam-ring I, that loosely engages said groove, which latter is of such a proportionate depth as will allow four similar sloping projections *n* to have a wedging action upon the projections *m* of the ring G when the cam-ring I is moved to cause such an engagement of parts, to enforce which a hub-plate J is located and secured outside of the loose cam-ring I, axially coincident with the center of the face-plate A, which hub-plate retains the cam-rings and gear-ring in their respective positions.

The thickness of the cam-rings G and I is so proportioned to that of the gear-ring F, as well as the depth of the groove *c* from the bottom of the teeth in the pinions E to the inner face of the hub-plate J, that the lateral revoluble movement of the loose cam-ring I by a handle *o* in one direction will cause the sloping faces of the four projections *n* on the loose cam-ring to impinge upon the similar sloping faces of the projections *m* of the stationary cam-ring and force the teeth on the gear-ring F to have a positive engagement with the teeth on all the pinions E.

The handle *o*, before mentioned, projects from the periphery of the loose ring I between two of the flanges *e'*, and is provided with a spring-actuated slide-bolt *o'*, that is adapted to interlock with one of two socket-holes *p* (shown in Figs. 2 and 3) when the bar is adjusted to force the cam-ring G on the gear-ring F, or by an opposite movement to remove the projections *n* from the projections *m* and allow the gear-ring to lie loose upon the pinions E.

The hub-plate J is centrally perforated and threaded of a size to fit upon the threaded end of a lathe-spindle, (not shown,) which connection of parts will secure the chuck upon the spindle for use to clamp and retain material therein to be operated upon by the lathe.

In using the chuck to retain a piece of material in position to be turned or bored out on the lathe if such an article is circular on its periphery the chuck will then be adjusted to move all the pinions E and screws D together by the use of a wrench applied to the square end of one screw and revolubly moved in connection with it, which will slide the four jaws B in or out on the face-plate A to engage or release the material. Should the piece of material to be operated upon be of an irregular form, the handle *o* is shifted so as to release the cam-ring G from pressure on the gear-ring F, and thus permit an independent movement of each jaw by a manipulation of its actuating-screw, whereby the jaws B may be set to impinge on a piece of work at four points and bring the portion to be turned in the lathe concentric with the axis of the chuck.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In a lathe-chuck, the combination, with a radially-slotted circular face-plate and jaws provided with nuts adapted to slide in the slots of the face-plate and having stepped faces, of screws engaging the nuts on said jaws, bevel-pinions on the inner ends of said screws, a bevel-faced gear-ring normally imposed loosely on said pinions, a non-rotatable cam-ring bearing on the gear-ring and having radial cam projections on one face, a rotatable cam-ring bearing on the first-named cam-ring and provided with radial cam projections mating the cam projections thereon, and a locking-handle carried by the rotatable cam-ring, having a spring-actuated slide-bolt, which will enter either of the socket-holes *p* in the flange *c'* and retain the gear-ring in geared condition with the pinions or hold the cam projections *n* and *m* separated, substantially as set forth.

CHARLES F. FULMER.
WILLIAM E. KELVIE.

Witnesses:
SAMUEL A. CLOUSTON,
JOHN W. DIXON.