

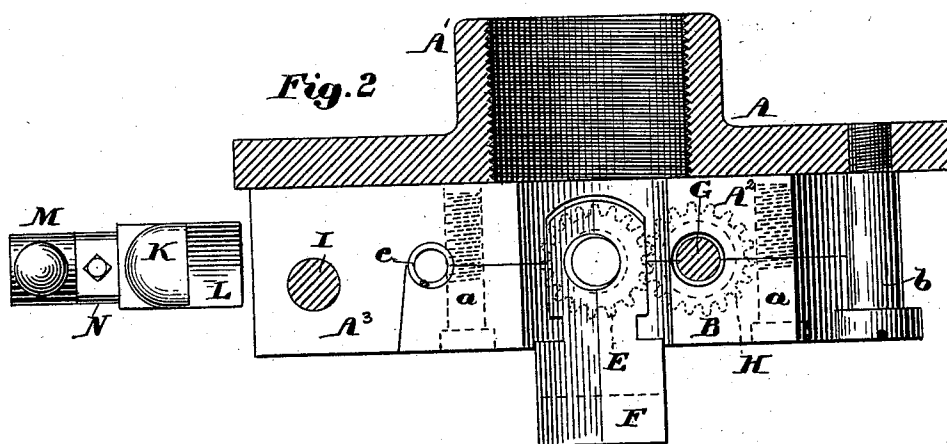
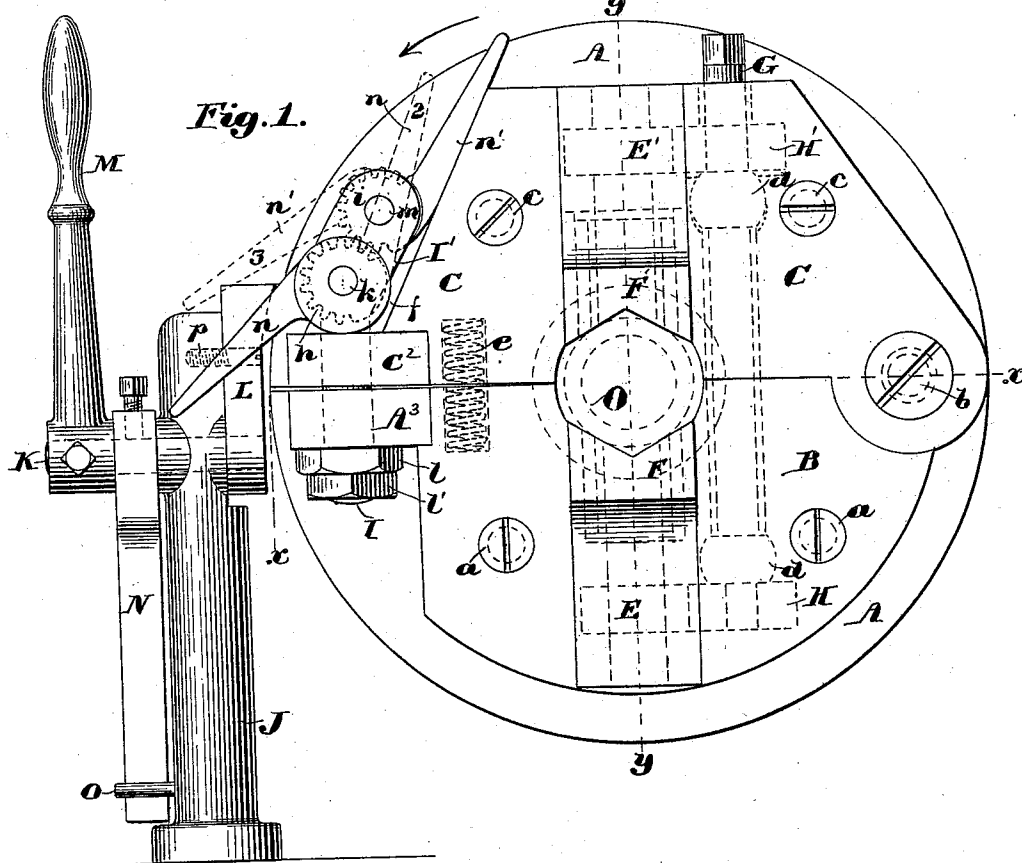
(No Model.)

2 Sheets—Sheet 1.

R. H. HURLBUT.
CHUCK.

No. 599,562.

Patented Feb. 22, 1898.



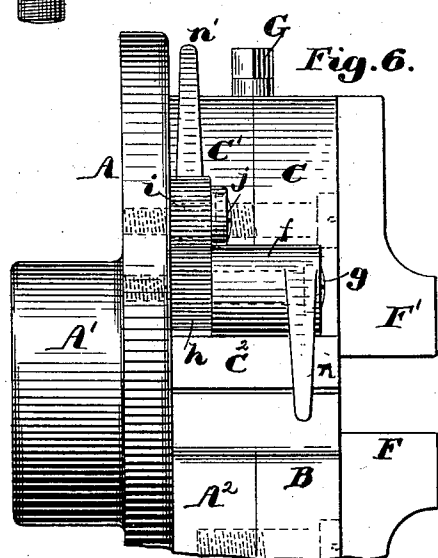
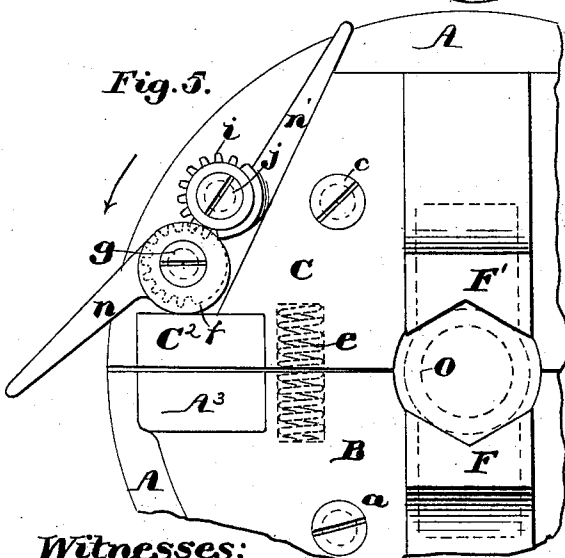
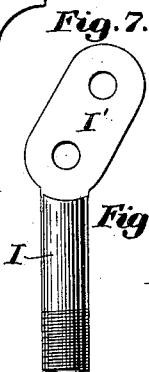
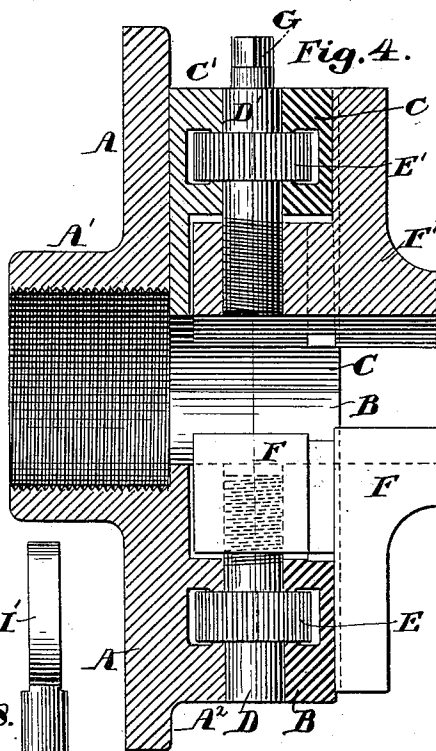
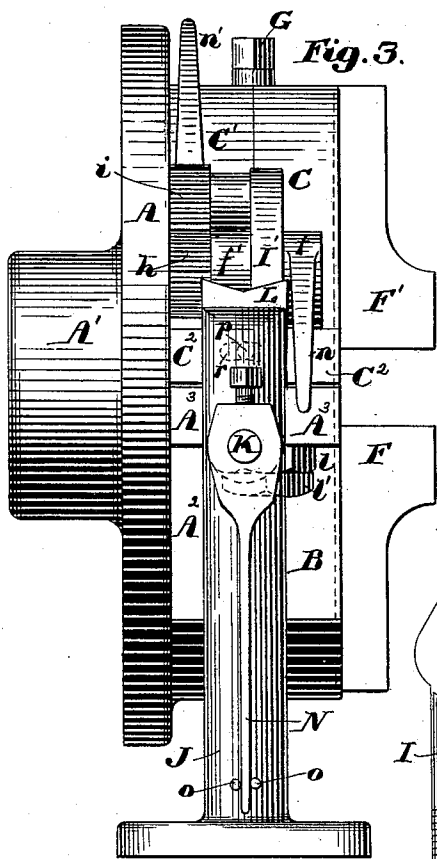
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Walter E. Lombard.
William E Davis

Inventor:
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Witnesses:
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UNITED STATES PATENT OFFICE.

RUFUS H. HURLBUT, OF SUDBURY, MASSACHUSETTS.

CHUCK.

SPECIFICATION forming part of Letters Patent No. 599,562, dated February 22, 1898.

Application filed October 7, 1897. Serial No. 654,447. (No model.)

To all whom it may concern:

Be it known that I, RUFUS H. HURLBUT, of South Sudbury, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Chucks, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to chucks, and is designed especially for use on machines for cutting off pipes or rods, but is equally applicable to machines employed for a variety of other purposes; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings, and to the claims hereto appended and in which my invention is clearly pointed out.

Figure 1 of the drawings is a front elevation of a chuck and the devices for operating the same and embodying my invention. Fig. 2 is a sectional plan, the cutting plane being on line *x x* on Fig. 1, cutting only through the face-plate or circular disk of the clutch. Fig. 3 is a side elevation of the same parts with the operating-handle removed. Fig. 4 is a section on line *y y* on Fig. 1 with one of the clamping-jaws shown in elevation. Figs. 5 and 6 are respectively a partial front elevation and a partial side elevation of a clutch proper, illustrating a modification of the mode of mounting the gear-segments and cam for operating the clamping-jaws to clamp and unclamp the pipe or rod to be operated upon without stopping the revolution of the clutch; and Figs. 7 and 8 are two elevations of the cam-carrying and jaw-clamping bolt.

In the drawings, A is a circular face-plate or disk provided with the internally-threaded hub A' or other suitable means of securing it to the machine-spindle and has formed in one piece therewith the outwardly-projecting segmental portion A², with the ear A³, and B is a cap bolted to the part A² by the screw-bolts *a a*, as shown in Fig. 1.

The cap B and the part A² are entirely at one side of the center or axis of the face-plate A. The face-plate A also has pivoted thereto at *b a* jaw-carrying member, composed of the two plates C and C', bolted together by the screw-bolts *c c*, and the part C' having

formed in one piece therewith the ear C², as shown.

The parts A² and B have formed in their contiguous faces bearings to receive the screw-shaft D, one-half in each of said parts, and also recesses to receive the spur-gear E, mounted upon and firmly secured to said screw-shaft D, and the parts C and C' in like manner have formed in their contiguous faces bearings to receive the screw-shaft D', one-half in each of said parts, and also has formed therein recesses to receive the spur-gear E', firmly secured upon said screw-shaft D', said screw-shafts and gears being so fitted to their bearings and recesses that said screw-shafts are free to be revolved, but cannot be moved endwise, in said bearings, and said screw-shafts are provided with right and left screw-threads.

F and F' are two jaws of well-known construction, fitted, respectively, to guideways in the caps B and C, and are engaged, respectively, by the screw-shafts D and D' as a means of moving said jaws endwise in said guideways to adjust them to the desired distance apart to clamp the particular pipe or rod to be acted upon.

G is a shaft provided near each end with a collar or enlargement *d*, the periphery of which is in the form of a section of a sphere which is fitted to correspondingly-shaped bearings formed in the contiguous faces of the caps B and C and the parts A² and C', to which said caps are bolted.

The shaft G has firmly secured thereon the two spur-gears H and H', which engage with and impart motion to the gears E and E', respectively, and one end of said shaft G has a squared section to receive a crank for revolving the same, said shaft G and gears H and H' being shown in dotted lines in Fig. 1 and the shaft in full lines and the gears in dotted lines in Fig. 2. A spring *e* is inserted in recesses formed in the hinged jaw-carrier C C' and the fixed jaw-carrier A² B, the tension of which tends to move said hinged section C C' away from the parts A² and B. An eccentric cam *f* is mounted upon a suitable journal in position to act upon the ear C² to press the hinged jaw-carrying section C C' toward the parts A² B to clamp the jaws upon the pipe or rod to be operated upon against

the tension of the spring *e*, or when moved about its axis to permit the tension of said spring to force the hinged section away from the parts *A*² and *B* to unclamp the pipe or rod.

5 The cam *f* may be mounted upon a stud *g*, set in a fixed position in the face-plate or disk *A*, and have formed in one piece therewith or firmly secured thereto the spur gear-wheel *h*, which engages with and imparts motion to
10 the spur-segment *i*, mounted upon the stud *j*, also firmly set in the disk *A*, all as shown in Figs. 5 and 6, or said cam may be firmly secured upon the shaft *k*, fitted to and revoluble in a bearing in the elongated plate-like
15 head *I*' of the bolt *I*, which extends through the ears *A*³ and *C*² and is provided with the nut *l* and check-nut *l*' below the ear *A*³, as shown in Figs. 1 and 3. The shaft *k* also has firmly secured thereon, upon the opposite side
20 of the plate-like head *I*', another cam *f*', a duplicate of *f*, and the spur gear-segment *h*, which engages with and imparts motion to the gear-segment *i*, mounted upon and revoluble about a stud *m*, set in a fixed position
25 in the head-plate *I*'; but in whichever way said cam *f* is mounted it is provided with the arm *n*, and the gear-segment *i* is provided with a similar arm *n*', both of which arms project to a greater or less extent beyond the
30 periphery of the disk *A*, according as to whether they are at one extreme or the other of their vibratory movements. These arms *n* and *n*' are arranged and revolve in planes at right angles to the axis of the machine-
35 spindle and distant from each other about one and three-quarters of an inch, more or less, as shown in Figs. 3 and 6.

J is a standard secured in a fixed position on the bed of the lathe, at that side thereof
40 toward which the top of the clutch moves when rotated and centrally between the paths of revolution of the arms *n* and *n*', as shown in Fig. 3.

The standard *J* has mounted in a bearing
45 therein, near its upper end, the rocker-shaft *K*, so as to be revoluble therein, the inner end of which shaft has firmly secured thereon the upwardly-projecting plate-like arm *L*, the upper end of which has a width somewhat less
50 than the distance between the planes of revolution of said arms and has formed therein an obtuse *V*-shaped notch, as shown.

The shaft *K* has firmly secured thereto, outside of the standard *J*, the operating hand-
55 lever *M* and the spring *N*, said spring depending from said shaft and having its lower end inserted between the two pins *o o*, set in said standard, as shown in Figs. 1 and 3.

The object of my invention is to enable the
60 jaws to be clamped upon or unclamped from the pipe or other object being operated upon without stopping the revolution of the chuck, and to this end the operation of my invention is as follows: The positions of the several
65 parts, as shown in the drawings, are such as indicate the jaws *F* and *F*' as firmly clamped upon the pipe *O*, (shown in dotted lines in

Figs. 1 and 5,) preparatory to cutting off a section of said pipe. When the cutting off is completed and it is desired to readjust the
70 pipe for another cut, the operator moves the handle toward the right of Fig. 3, thereby moving the upper end of the plate *L* into the path of revolution of the arm *n*, so that as the chuck revolves in the direction indi-
75 cated by the arrow on Fig. 1 said arm *n* will strike the plate *L* and be moved about its axis into the position indicated by dotted lines at 2, Fig. 1, when the shorter radius of the cam *f* being turned toward the ear *C*² the
80 tension of the spring *e* will move the hinged portion of the chuck about its pivot and away from the fixed portion, thereby moving the clamping-jaws *F* and *F*' away from the pipe and release it, so that it may be adjusted end-
85 wise preparatory to cutting off another section. When the arm *n* is moved into the position indicated by dotted lines at 2, the action of the gear-segment *h* upon the gear-segment *i* causes the arm *n*' to be moved into
90 the position indicated by dotted lines at 3 in Fig. 1. When the pipe has been adjusted to the proper position, the operator moves the handle *M*, which in the meantime has been moved into its normal position by the tension
95 of the spring *N*, toward the left of Fig. 3, when the upper end of the plate *L* will be moved into the path of revolution of the arm *n*', which is now in the position indicated by dotted lines at 3, Fig. 1, and as the chuck re-
100 volves said arm comes in contact with said plate and is moved about its axis into the position shown in full lines, and the arm *n* and cam *f* are returned to the positions shown in full lines in Fig. 1, and by the action of said
105 cam upon the ear *C*² the jaws are firmly clamped upon the pipe.

The movements of the plate *L* in either direction are limited by the pin *p*, set in the standard *J* and projecting into the slot *r*,
110 formed in said plate, as shown in dotted lines in Figs. 1 and 3.

When it is desired to operate upon a pipe or rod of a smaller diameter than that shown in dotted lines in Figs. 1 and 3, the shaft *G* is re-
115 volved by means of a crank or socket-wrench in the proper direction for the screw-shafts *D* and *D*' to move the jaws *F* and *F*' toward each other till they firmly clamp the pipe, when the hinged section of the clutch is pressed toward
120 the fixed portion by the cam *f*.

When once adjusted to the particular size of pipe or rod to be operated upon, any number of adjustments of the pipe and clamping and unclamping of the same may be made
125 without stopping the revolution of the clutch, which is a great advantage, inasmuch as a great saving of time is thereby effected.

What I claim as new, and desire to secure by Letters Patent of the United States, is—
130

1. A chuck having two jaw-carrying sections pivotally connected together and movable toward and from each other, in combination with a spring interposed between said

sections to move them apart; a clamping-jaw carried by each of said sections; a cam mounted on said chuck and constructed and arranged to operate by its rotation to move said sections toward each other or permit them to be forced apart by said spring; and means for rotating said cam in opposite directions during the revolution of said chuck.

2. The combination in a chuck of two jaw-carrying sections pivotally connected together and movable toward and from each other; a clamping-jaw carried by each of said sections; a cam mounted upon said chuck and provided with an arm projecting therefrom beyond the periphery of said chuck; a gear wheel or segment connected with, and revolvable about the same axis as, said cam; a second gear wheel or segment mounted upon said chuck with its teeth engaging said first-mentioned gear and provided with an arm projecting therefrom beyond the periphery of said chuck in a plane different from that of the first-mentioned arm; a stop-plate pivotally mounted upon a fixed portion of the lathe; means for normally maintaining said plate in a position between the paths of revolution of said arms; and means for moving said plate into the paths of revolution of either of said arms at the will of the operator.

3. The combination in a chuck of two jaw-carrying sections pivotally connected together and movable toward and from each other; the clamping-jaws F and F' mounted one on each of said sections; the screw-shafts

D and D' engaging said jaws; the spur-gears E and E' mounted respectively on said screw-shafts D and D'; the shaft G having a bearing in each of said pivotally-connected sections; the gears H and H' mounted on said shaft and engaging respectively the gears E and E'; and means for moving said pivotally-connected sections toward and from each other without arresting the revolution of the chuck.

4. The combination of a chuck having two pivotally-connected sections; carrying the clamping-jaws F and F'; the screw-shafts D and D'; the shaft G having ball-and-socket bearings in each of said sections; the spur-gears E, E', H, and H', connecting the shafts D D' and G; the spring *e* interposed between said sections; the cam *f* provided with the arm *n*; the gear-segments *h* and *i*, the latter provided with the arm *n'*; the fixed standard J; the rocker-shaft K; the plate L; the lever M and the spring N all secured upon said shaft K; and the pins *o o*, all constructed, arranged and operating substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 5th day of October, A. D. 1897.

RUFUS H. HURLBUT.

Witnesses:

N. C. LOMBARD,
C. B. CHOATE.