

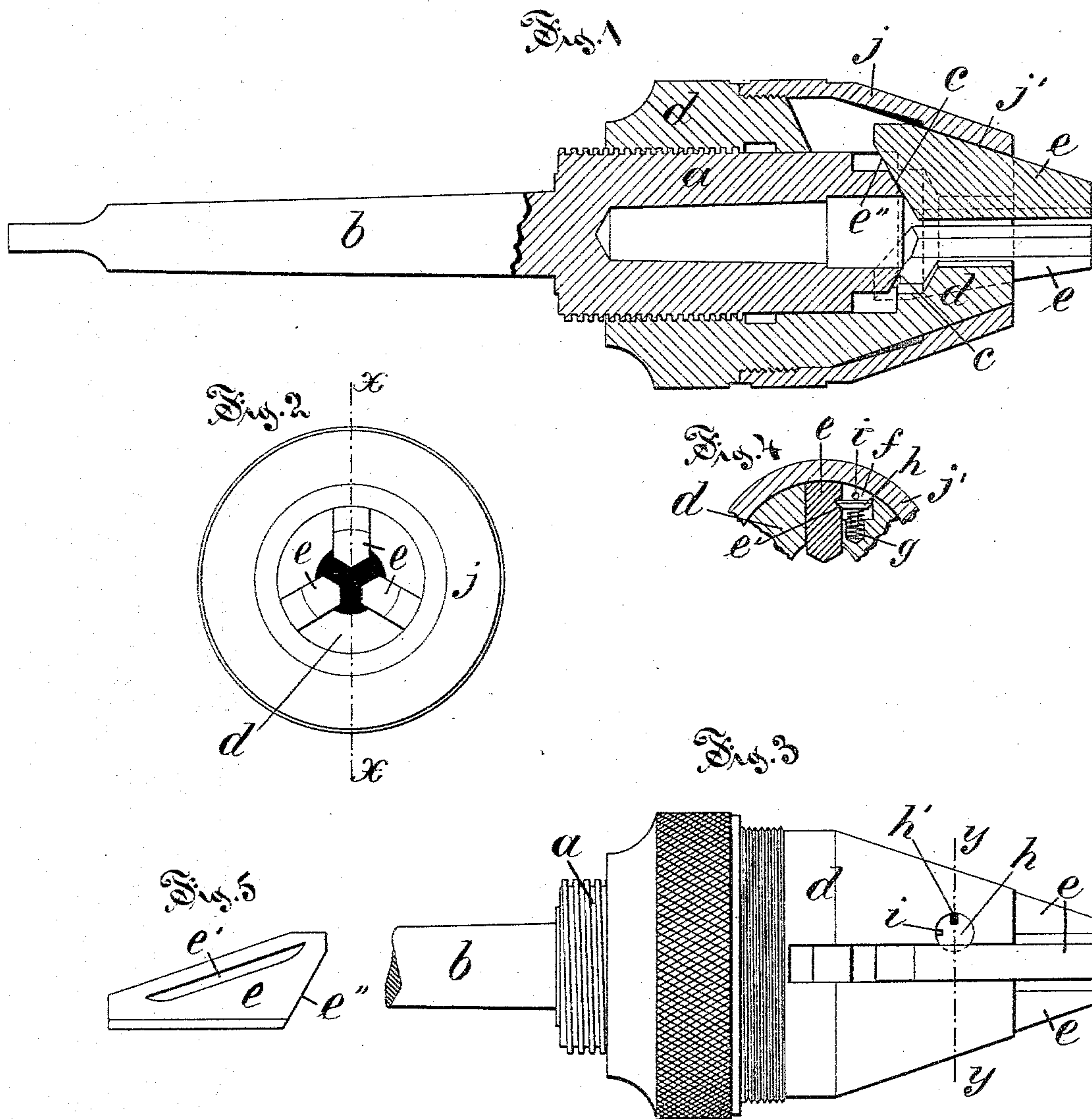
(No Model.)

C. L. BUTLER.

DRILL CHUCK.

No. 356,616.

Patented Jan. 25, 1887.



Witnesses:

W. M. Yorkman,

H. R. Williams,

Inventor:

Calvin L. Butler,

by Simonds & Burdett,

Attys.



# UNITED STATES PATENT OFFICE.

CALVIN L. BUTLER, OF GREENFIELD, MASSACHUSETTS, ASSIGNOR TO JAMES N. SKINNER, OF NEW BRITAIN, CONNECTICUT.

## DRILL-CHUCK.

SPECIFICATION forming part of Letters Patent No. 356,616, dated January 25, 1887.

Application filed November 11, 1886. Serial No. 218,528. (No model.)

*To all whom it may concern:*

Be it known that I, CALVIN L. BUTLER, of Greenfield, in the county of Franklin and State of Massachusetts, have invented a certain new and useful Improvement in Drill-Chucks, of which the following is a description, reference being had to the accompanying drawings, where—

Figure 1 is a view in central longitudinal section of a chuck embodying my said improvement, the section being on the plane denoted by the dotted line X X of Fig. 2. Fig. 2 is a front end view of the chuck entire. Fig. 3 is a view of the chuck with the conical outer shell removed. Fig. 4 is a view in (partial) cross-section of the parts shown in Fig. 3 on the plane denoted by the dotted line Y Y. Fig. 5 is a side view of one of the jaws.

The letter *a* denotes a screw-shaft borne on and generally integral with the pintle *b*, which fits in the common manner into the rotary shaft of the head-stock of a lathe. This screw-shaft carries at its front end the conical bearing-surface *c*. The parts *a* and *c*, I denominate the "screw-shaft cone."

The letter *d* denotes what may be termed the "chuck-body." Its rear is interiorly threaded and screws upon the thread of the screw-shaft cone. The front part of the chuck-body *d* is mortised longitudinally, and carries in the mortise the jaws *e*. Each jaw bears a groove, *e'* in one side. By the side of each of the mortises just mentioned there is a socket, *f*, drilled radially in the chuck-body. In each such socket there is a spring, *g*, tending to press a disk, *h*, outward. These disks have, therefore, some play up and down in these sockets, the outward limit of this play being defined by the stop-pin *i* projecting from the wall of the socket. These disks *h* have each a peripheral notch, *h'*, permitting the passage of the disk past the stop-pin, after which, by a partial rotation of the disk, it (the disk) is locked into the socket below the stop-pin. These disks *h* project

laterally into the grooves *e'*, so that the springs *g* constantly tend to press the jaws *e* radially outward, the co-operation of the disks *h* and grooves *e'* meanwhile permitting the free longitudinal movement of the jaws.

The letter *j* denotes a conical shell screwing upon the front end of the chuck-body. On its interior surface this conical shell bears an annular cam, *j'*, which co-operates with the peripheral surfaces of the jaws *e*. The rear ends of the jaws *e* bear the bevels *e''*, which co-operate with the conical bearing-surface *c*.

Now, when the chuck-body is "run" backward on the screw-shaft *a*, the conical bearing-surface *c* bears against the bevels *e''* on the rear ends of the jaws, forcing the jaws longitudinally forward and by their peripheral contact with the annular cam *j'*, forcing them radially toward a common center. Coincident with this action there is a lever action of the jaws, the disks *h* acting as elastic fulera, the rear ends of the jaws being forced radially outward and the front ends being forced radially inward. This double action makes the grip of the jaws stronger and more secure than would otherwise be the case.

I claim as my improvement—

1. In combination, in a chuck, the screw-shaft cone *a*, the chuck-body *d*, the shell *j*, bearing the annular cam *j'*, and the jaws *e*, bearing the bevels *e''*, all substantially as described, and for the purpose set forth.

2. In combination, in a chuck, the jaws *e*, bearing grooves *e'*, the chuck-body *d*, sockets *f*, and disks *h*, all substantially as described, and for the purpose set forth.

3. In combination, in a chuck, the jaws *e*, bearing grooves *e'*, the chuck-body *d*, sockets *f*, springs *g*, and disks *h*, all substantially as described, and for the purpose set forth.

CALVIN L. BUTLER.

Witnesses:

CHAUNCEY BRYANT,  
HARRISON T. BABCOCK.