A. HURD.

CHUCKS.

No. 190,043. Patented April 24, 1877.

Fig. 1.

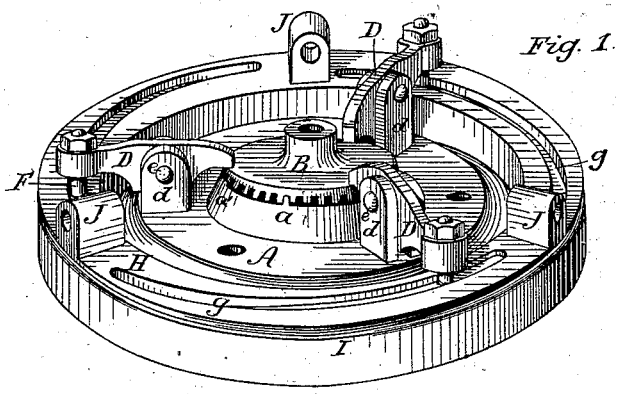


Fig. 2.

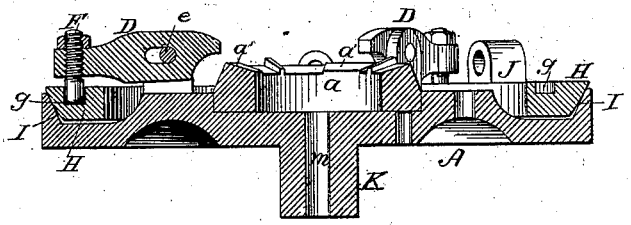
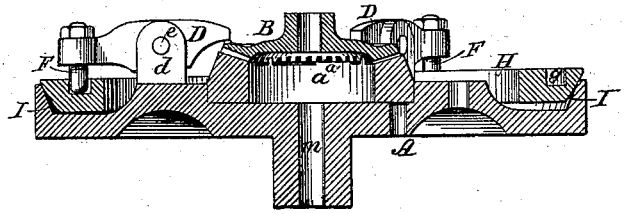


Fig. 3.



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ASA HURD, OF YONKERS, NEW YORK.

IMPROVEMENT IN CHUCKS.

Specification forming part of Letters Patent No. **190,043**, dated April 24, 1877; application filed February 21, 1877.

To all whom it may concern:

Be it known that I, ASA HURD, of Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Chucks, of which the following specification is a full and clear description:

This invention relates to that class of special tools which are adapted to certain definite operations, though this invention is not restricted to a range of operations limited in that way. Therefore, while I show and particularly describe my invention as I construct it for use in boring the hubs of bevel-gear wheels, it is not to be understood that I restrict myself to any organization adapted to that work only, for it is evident that, without any change in its principle of action or material modification of form, it may be adapted to hold work of any other description.

It is desirable to bore the hubs of bevel-gear wheels, and it is apparent that the axis of the boring-tool must coincide exactly with the axis of the cone of the wheel.

The object of my invention (in the form shown) is to provide a chuck or holder which shall receive a bevel-wheel and automatically sieze, true, and hold it in position. It therefore consists of a suitable bed-plate and holding-jaws, which are caused to advance or recede by the action of a cam-ring, which ring is self-adjusting, so that said jaws encounter, with equal force, unequal surfaces.

That others may fully understand my invention, I will particularly describe it, having reference to the accompanying drawing, wherein—

Figure 1 is a perspective view of my chuck as applied to the holding of bevel-wheels. Fig. 2 is a transverse section of the same. Fig. 3 is a similar section, adapted to illustrate the self-adjusting action of the cam-ring.

A is the bed-plate, provided with a conical seat, *a*, concentric with the center of said plate, and adapted to the cone of the particular wheel which this chuck is designed to hold. The conical seat *a* is constructed with three narrow bearing-sections, *a'*, slightly higher than the general surface of *a*, so that the gear-wheel B, when in position, will rest upon these three points only, and will necessarily have, therefore, a stable and steady formation. The wheel B will of itself seek a true position on the seat *a'*, because in no other position can the points of the cogs find a steady engagement with the surfaces of the seat. To cause the center of the gear-wheel B to assume its true position and to prevent any side movement therefrom, and also to keep said gear from rotating, three or more cogs or radial ribs are placed upon the seat *a*, and these mesh with the cogs of the gear B, when the latter is in position.

At equal distances from each other I place three radial holding-levers, D D D, which have their bearings or fulcrum-points in lugs *d d*, located in pairs equidistant from the axis of the seat *a*. The lever D has a slot for the pivot-pin *e*, so that said lever may move in a radial direction, when required to do so, and this enables it to advance and recede as to the axis of the chuck and give the blank ample room for escape when the holding-levers are withdrawn. Ar the rear end of each lever D there is an adjustable pin or stud, F, which projects downward into a cam-slot, *g*, in a cam-ring, H. The cam-grooves *g* are similar segments of equal spirals, and their bottoms are similar inclined planes, so that when said cam-ring is rotated about the axis of the seat *a* all the levers D are simultaneously moved forward or backward, and their inner ends elevated or depressed, as the case may be, and said lever would, at the same moment and with equal force, engage with the surface of the bevel-wheel B, provided said surface was true and all in the same plane. But, in practice, this will seldom, if ever, be the case, and a self-adjustment of the levers is necessary, in order to enable them to gripe and hold every wheel presented, notwithstanding inequalities of surface, and this end is accomplished by seating the ring H upon the concave rim I of the chuck-plate A, so that when the forward and downward movement of the point of one lever, D, is arrested by protuberance of the wheel before the other said levers have reached an engagement, said ring H will tip or move laterally on said seat, to force up the free levers, and will continue to do so until all the levers have engaged with the wheel B, after which the continued motion of the ring H will exert an equal force upon all the levers.

Lugs J or other suitable devices may be

placed upon the ring H, to facilitate or effect the necessary revolution of the same.

If it is desired that the boring of the hub of wheel B shall be as accurate as it is possible to be, it is advisable to place upon the back of the chuck-plate A a hub or boss, K, and through this boss, coincident with the axis of the same, a guide-hole, *m*, is bored, and into this hole the guide-pin of the boring-tool enters, to guide said tool and keep it truly centered while completing the bore, which, in such case, will have been begun by a tool of less diameter.

Having described my invention, what I claim as new is—

1. A chuck for holding special members or devices, provided with a central seat adapted to receive and hold such special member, combined with self-adjusting holding levers or jaws, to gripe and hold said member, substantially as set forth.

2. A clutch provided with a conical seat, *a*, having three bearing-points, *a'*, combined with levers D, actuated by a ring, H, having inclined spiral grooves, whereby the points of said levers are advanced and depressed by a single movement of said ring.

3. The cam-ring H, provided with inclined sprial grooves *g*, seated in the concave rim I, whereby it is capable of self-adjustment, as set forth, combined with the radial levers D, having pins F entering said grooves, whereby said levers are simultaneously advanced and adapt themselves to unequal surfaces, as set forth.

4. The levers D, constructed with longitudinal slots for the fulcrum-pins *e*, combined with a cam-ring provided with spiral grooves, having inclined bottoms, as set forth.

5. A chuck having automatic levers or jaws D D for griping and holding the object to be bored, and the seat *a*, to receive and support said object, combined with a hub at the back and a truly-axial guide-hole, *m*, therein, to receive and guide the point of the boring-tool, as set forth.

6. The teeth *c c c*, constructed on the constructed on the convex surface of the chuck-plate *a*, substantially as set forth, and for the purpose described.

ASA HURD. [L. S.]

Witnesses:

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DAVID SCOTLAND.