

G. W. HORROCKS & C. W. MILLAR.

CHUCK.

APPLICATION FILED AUG. 9, 1910.

993,829.

Patented May 30, 1911.

FIG. 1.

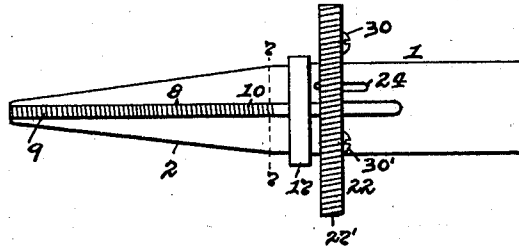


FIG. 2.

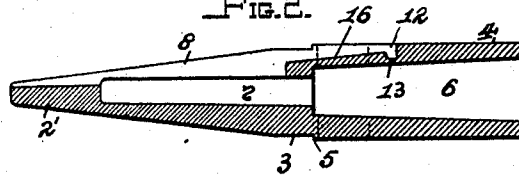


FIG. 3.

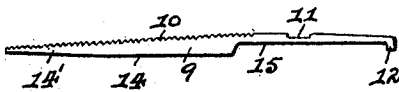


FIG. 4.

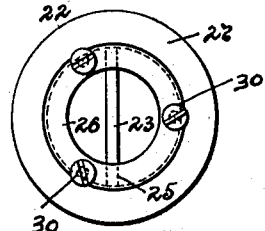


FIG. 5.

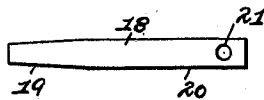


FIG. 6.

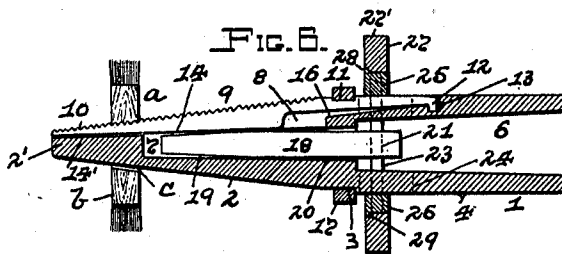
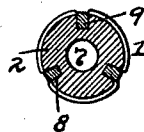


FIG. 7.



Witnesses:
J. B. Humphries.
O. L. Thompson.

Inventors:
George W. Horrocks,
Charles W. Millar,
By J. M. Cooke,
attorney.

UNITED STATES PATENT OFFICE.

GEORGE W. HORROCKS, OF WILMERDING, AND CHARLES W. MILLAR, OF CARNEGIE, PENNSYLVANIA, ASSIGNORS OF ONE-THIRD TO HARLEY C. PLATZ, OF WILKINSBURG, PENNSYLVANIA.

CHUCK.

993,829.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed August 9, 1910. Serial No. 576,361.

To all whom it may concern:

Be it known that we, GEORGE W. HORROCKS, a resident of Wilmerding, in the county of Allegheny and State of Pennsylvania, and CHARLES W. MILLAR, a resident of Carnegie, county and State aforesaid, have invented a new and useful Improvement in Chucks; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to chucks, and has special reference to the class of chucks for use in connection with tools and other articles placed thereon for rotation.

The object of our invention is to provide a cheap, simple and efficient form of a chuck which can be used on motors and will enable the tools to be applied thereon and removed therefrom without the stopping of the motor, as well as enabling tools to be connected to the same by a gripping action.

To these ends our invention consists, generally stated, in the novel arrangement, construction and combination of parts, as hereinafter more specifically set forth and described and particularly pointed out in the claims.

To enable others skilled in the art to which our invention appertains to construct and use our improved chuck, we will describe the same more fully, referring to the accompanying drawing, in which—

Figure 1 is a side elevation of our improved chuck. Fig. 2 is a longitudinal central section of the barrel or body of the chuck. Fig. 3 is a side view of one of the blades or jaws employed. Fig. 4 is a front view of the slip ring device removed from the chuck. Fig. 5 is a side elevation of the expansion pin employed. Fig. 6 is a longitudinal central section of the chuck. Fig. 7 is a cross-section on the line 7—7 Fig. 1.

Like symbols of reference herein indicate like parts in each of the figures of the drawing.

As illustrated in the drawing, 1 represents the barrel or body portion, which is provided with the tapered or cone-shaped exterior portion 2 at front end of the same, and the straight exterior portion 3 intermediate of said portion 2 and the enlarged exterior straight portion 4 at the rear end of the body and forming a shoulder 5 where such portion 4 connects with the portion 3.

Within the body portion 1 and extending

from the rear end of the straight portion 4 is the inwardly tapering hollow portion 6, which connects with the smaller and similar shaped hollow portion 7 extending into the tapered portion 2 to a solid front end portion 2' in the same, and extending through said portions 2 and 3 and connecting with said portion 7 and with solid end portion 2' are a series of slots 8 for the reception of the blades or jaws 9. These jaws are provided with serrated outer faces 10 at the front end of the same and with a recess 11 in each of said faces back of the serrated faces thereon, while at the rear end of said jaws is a depending lug 12 which fits within a seat 13 in the portion 4 and supports such end of the same. The inner faces 14 of these jaws 9 rest in the slots 8 by their front ends 14' against the solid end 2' on the tapered portion 2, and the rear end of said faces is recessed, as at 15, in order to form a spring portion in said jaws at this point and by the inwardly tapered portion 16 on the body 1 and within said slots, so that the collar 17 when placed in position within the recesses 11 in said jaws can be sprung to place and thereby act to hold said jaws in position within said slots.

Within the hollow portion 7 of the body 1 is the expansion pin 18, which is provided with an inwardly tapered front end portion 19 and the straight rear end portion 20 which extends into the hollow portion 6 and is provided with a hole 21 therein. This pin 18 is adapted to bear at its front end 19 against the inner faces 14 of the jaws 9 and is operated by means of the operating sleeve 22, which is slidably mounted on the portion 4 of the body 1, and is connected to said pin by means of a pin 23 passing through the hole 21 on said pin 18 and through slots 24 in the portion 4 of the body 1, as well as through holes 25 in the inner ring 26 of said sleeve. An outer slip ring 27 with a serrated outer edge 27' fits around the ring 26 and is held in place thereon by means of a shoulder 28 on the outer face of said ring 26 fitting in a recess 29 on the outer face of ring 27, as well as through set screws 30 engaging with said ring 26, and whose heads 30' extend beyond the inner face of said ring 27.

The use and operation of our improved chuck is as follows—The parts of the chuck

being assembled together, as shown in Fig. 6, with the chuck being connected in the manner to the shaft (not shown) of a motor or other source of power through its hollow portion 6 being in engagement with said shaft, and it is desired to apply a tool thereto, such as is shown at *a* in said figure, which tool consists of a circular brush having a wooden body portion *b* and provided with a central opening *c* in the same, all that is necessary is to push back the sleeve 22 to its rear position by grasping the edge 27' of the ring 27, which will draw back the pin 18 with the same by the pin 23 connected to said sleeve through the slots 24, and thereby allow the jaws 9 to be dropped inwardly in their slots 8 in the body 1 on account of the tension in said jaws being released by the withdrawal of said pin 18. After this is done the brush *a* is slipped onto the cone-shaped portion 2 while the shaft of the motor is in motion by its hole *c* fitting around said portion, and then the operating sleeve 24 by its face 27' is grasped by the operator and pressed toward the collar 17 along the straight portion 4 of body portion 1 until the pin 23 carried by said sleeve reaches the front extremity of the slots 24, while such operation of moving said sleeve will push out the pin 18, which will thereby press out the jaws 9 and cause the serrated faces 10 on said jaws to bite into the body *b* of the brush *a* through the hole *c* in said brush.

When it is desired to remove the brush *a* from the chuck, all that is necessary is to push back the sleeve 22, as hereinbefore described to draw down the jaws 9, and then the said brush may be slipped off the cone-portion 2 of the chuck, and another brush or tool applied as before described.

It will be evident that all the applications and removals of brushes and tools to and from our improved chuck may be accomplished without stopping or changing the speed of the shaft carrying the same from the motor or engine, which will overcome the usual loss of time and connecting and disconnecting of parts in the ordinary chuck employed in this class of work, and also the time which is ordinarily lost in allowing the motor or engine employed in coming to a dead stop for the applying and removal of the chuck. It will also be evident that the ordinary wear and tear usually occasioned by the stopping and starting of the engine or motor employed will be overcome, which will add to the longevity of the engine or motor in such work, while the chuck can have the desired tools applied and removed therefrom rapidly and conveniently and without injury to the person operating the device or to the parts of the chuck or tools. The parts of the chuck are also capable of being easily and quickly detached, so that

they can be repaired or renewed at will and when desired.

It will be obvious that various forms of tools, brushes and articles other than those described may be employed with our improved chuck as well as the number of gripping jaws may be varied, and that various modifications and changes in the design and construction of the same may be resorted to, without departing from the spirit of the invention or sacrificing any of its advantages.

What we claim as our invention and desire to secure by Letters Patent is—

1. A chuck comprising a body portion having gripping jaws movable through the same for engaging with a removable tool on said body portion, a movable pin in said body portion for opening said jaws to engage the tool during the rotating of said chuck, slidable means on said chuck for moving said pin, and an operating device rotatably held on said means.

2. A chuck comprising a body portion having gripping jaws movable through the same for engaging with a removable tool on said body portion, a movable pin in said body portion for opening said jaws to engage the tool during the rotating of said chuck, a slidable sleeve on said chuck for moving said pin, and an operating ring rotatably held on said sleeve.

3. A chuck comprising a body portion having gripping jaws movable through the same for engaging with a removable tool on said body portion, a movable pin in said body portion for opening said jaws to engage the tool during the rotating of said chuck, a slidable sleeve on said chuck and connected to said pin for moving the same, and a loosely mounted removable ring on said sleeve and rotatably held thereon for operating the same.

4. A chuck comprising a body portion having gripping jaws movable through the same for engaging with a removable tool on said body portion, a movable pin in said body portion for opening said jaws to engage the tool during the rotating of said chuck, a slidable sleeve on said chuck and connected to said pin by a pin connected thereto and passing through the same and through said body portion, and a loosely mounted removable ring on said sleeve and rotatably held thereon for operating the same.

5. A chuck comprising a body portion having gripping jaws movable through the same for engaging with a removable tool on said body portion, a movable pin in said body portion for opening said jaws to engage the tool during the rotating of said chuck, a slidable sleeve on said chuck and connected to said pin by a pin connected thereto and passing through the same and through said body portion, a shoulder on

said sleeve, and a loosely mounted removable ring on said sleeve and rotatably held against said shoulder for operating said sleeve.

5 6. A chuck comprising a body portion having gripping jaws movable through the same for engaging with a removable tool on said body portion, a movable pin in said body portion for opening said jaws to en-
10 gage the tool during the rotating of said chuck, a slidable sleeve on said chuck and connected to said pin by a pin connected thereto and passing through the same and through said body portion, a shoulder on

said sleeve, a loosely mounted ring on said sleeve for operating the same, and screw bolts on said sleeve and fitting against said ring by their heads to rotatably hold said ring against said shoulder.

In testimony whereof, we the said 20
GEORGE W. HORROCKS and CHARLES W.
MILLAR, have hereunto set our hands.

GEORGE W. HORROCKS.
CHARLES W. MILLAR.

Witnesses:

JAMES L. WEHN,
J. N. COOKE.

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Washington, D. C."
