C. R. MUELLER.

ROLL CHUCK.

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1,411,292.

Patented Apr. 4, 1922.

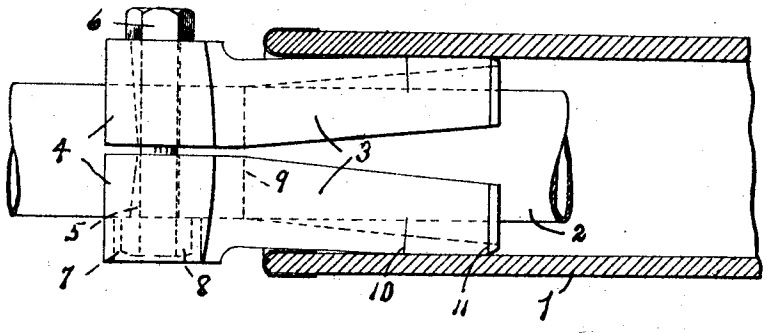



Fig. 1.

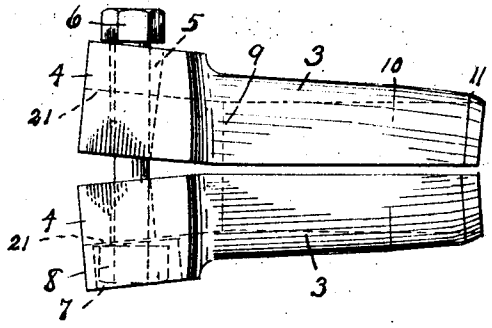



Fig. 2.

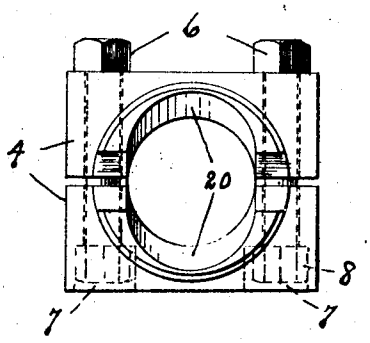



Fig. 3.

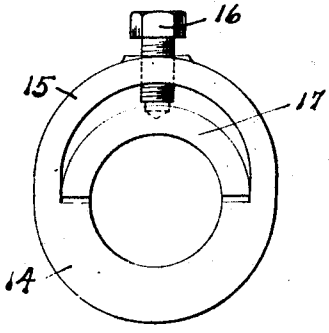



Fig. 4.

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## ROLL CHUCK.

1,411,292. Specification of Letters Patent. Patented Apr. 4, 1922.

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*To all whom it may concern:*

Be it known that I, CHARLES ROBERT MUELLER, a citizen of the United States, and residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Roll Chuck, of which the following is a specification.

This invention relates to means for centering and securing cylindrical bodies, such as tubes and rolls, to shafts without the use of set screws, keys or other devices which are liable to injure the surface of the shaft, and its object is to provide a device of this character which is adapted to secure a roll or other cylindrical body onto a shaft at any desired point in its length, and which will center the roll on the shaft.

This invention is a chuck consisting of a pair of jaws adapted to rock on a shaft to expand or collapse the chuck, and which, when collapsed, constitute a slightly tapering rounded body adapted to slip loosely into the member to be attached to the shaft, the jaws being bored at one end to fit the shaft when the chuck is collapsed, and bored at the other end to fit the shaft when the chuck is expanded, the interior surface of each jaw being in two sections at an angle to each other so as to form an interior ridge which acts as a fulcrum for the jaw to cause the chuck to expand or collapse when the jaws rock on these ridges.

It further consists in the details of construction illustrated in the accompanying drawing and particularly pointed out in the claims.

In the accompanying drawing, Fig. 1 is a central section of a roll mounted on a tubular shaft by means of my improved chuck. Fig. 2 is a side elevation of this chuck when collapsed. Fig. 3 is an end elevation taken from the right in Fig. 2 of this chuck when expanded. Fig. 4 is an end elevation of a modified form of clutch. Similar reference characters refer to like parts throughout the several views.

In Fig. 1 are shown the tubular roll 1 and a shaft 2 of much less diameter on which the roll is mounted. When tapering centering collars are employed to secure a loose roll on a shaft they must be driven into the tubular roller in order to center it and keys or set screws must be used to secure the collars on the shaft. When the roll is to be changed the tapering collars must be removed, which is often rendered difficult by the marred surface of the shaft. In printing machines the rolls for guiding and supporting the paper are often light and their ends are liable to injury by such tapering collars being driven into them, and the rolls are often further injured during the removal of these centering collars.

The present chucking or centering device not only does no injury to either roll or shaft, but it can lock the roll rigidly to the shaft and may be attached at any desired location on the shaft without the least injury to either roll or shaft.

In the preferred form, this chuck consists of two jaw members embodying slightly tapering but substantially semi-cylindrical parts 3 having heads 4 which are formed with tapering holes 5 to receive the bolts 6. One of the heads preferably has sockets 7 to receive the nuts 8 to prevent them from turning. These bolts are used to secure the jaw members to the proper shaft 2.

The jaw members are held in the position shown in Fig. 2 in a proper machine and bored as shown at 20 in Fig. 3 to fit the shaft 2 from their right ends up to the dotted line 9 indicated in Fig. 2. The opposite ends of the jaw members are then brought together and held in the position shown in Fig. 1 and the jaws are bored from their left ends as indicated at 21 in Fig. 2 to this same line 9 to fit the same shaft. At the same time, the opposite cylindrical ends are turned to a cylinder of substantially the same diameter as the bore of the roll 1 from about the lines 10 to the lines 11.

When a roll 1 is to be secured to the shaft 2, the collapsed chuck is slipped along the shaft to proper position and the end of the roll is slipped over the cylindrical end of the chuck. The bolts 6 are now turned down into the nuts 7 to draw the head portions of the jaws together, which causes the jaws to rock on the internal ridge or fulcrum along the line 9, expanding the round portions 3 of the chuck as indicated in Fig. 1. This forces the surfaces of the jaws between the lines 10 and 11 firmly against the inner surface of the roll, until the heads 4 grip the shaft 2, at which time a maximum outward pressure on the roll is exerted by the cylindrical jaws. The roll is thus not only centered and locked in position by the jaws but the chuck is rigidly

secured to the shaft without injuring the surface of either roll or shaft. Furthermore, the pressure on the roll is applied at a distance from the end thereof. When the bolts are unscrewed the parts 3 swing toward each other and the chuck disengages the roll.

In Fig. 4 I have shown the head 14 of one of the jaws formed with a yoke 15 which carries a set screw 16 by means of which the head 17 of the other jaw may be forced toward the jaw 14 so that they may grip a shaft between them.

The details and proportions of the various parts of this chuck may all be changed by those skilled in the art without departing from the spirit of my invention as set forth in the following claims.

I claim:—

1. In a chuck, the combination of a pair of slightly tapering rounded jaws, each having its inner surface in two sections at an angle to each other and meeting at an internal ridge which constitutes a fulcrum on which the jaw may rock when the chuck is mounted on a shaft, and means to force adjacent ends of the two jaws toward each other to expand the opposite ends.

2. In a chuck, the combination of a pair of slightly tapering rounded jaws, each having its inner surface in two sections at an angle to each other and meeting at an internal ridge which constitutes a fulcrum on which the jaw may rock when the chuck is mounted on a shaft, and means to force adjacent ends of the two jaws toward each other to expand the opposite ends, said opposite ends being finished to constitute sections of a cylindrical surface when the chuck is expanded.

3. In a chuck, the combination of a pair of slightly tapering rounded jaws, each having a head at one end and also having its inner surface in two semi-cylindrical sections at an angle to each other but with their axes in the same plane, the sections of the inner surfaces of the two jaws meeting at a substantially continuous circumferential ridge when the chuck is assembled, which ridge constitutes fulcra on which the jaws may rock when the chuck is mounted on a shaft, and bolts extending through the head portions of the jaws to cause these jaws to rock and the chuck to expand.

4. In a chuck, the combination of jaws adapted to extend into a roll to center the same, each of the jaws having an inner groove so it may be mounted on a shaft and with a ridge in the groove, and means to rock the jaws on the shaft to swing out the portions extending into the roll to be secured to the shaft.

5. A chuck adapted to be mounted on a shaft and to extend into the cylindrical opening in a body to be attached to the shaft, said chuck comprising a plurality of rounded jaws adapted to rock on the shaft, and means to rock said jaws to force the rounded jaws out against the inner cylindrical surface of said body.

CHARLES ROBERT MUELLER.