

Jan. 10, 1950

A. E. DRISSNER  
FLOATING CHUCK

2,494,166

Filed Aug. 3, 1945

2 Sheets-Sheet 1

*Fig. 2.*

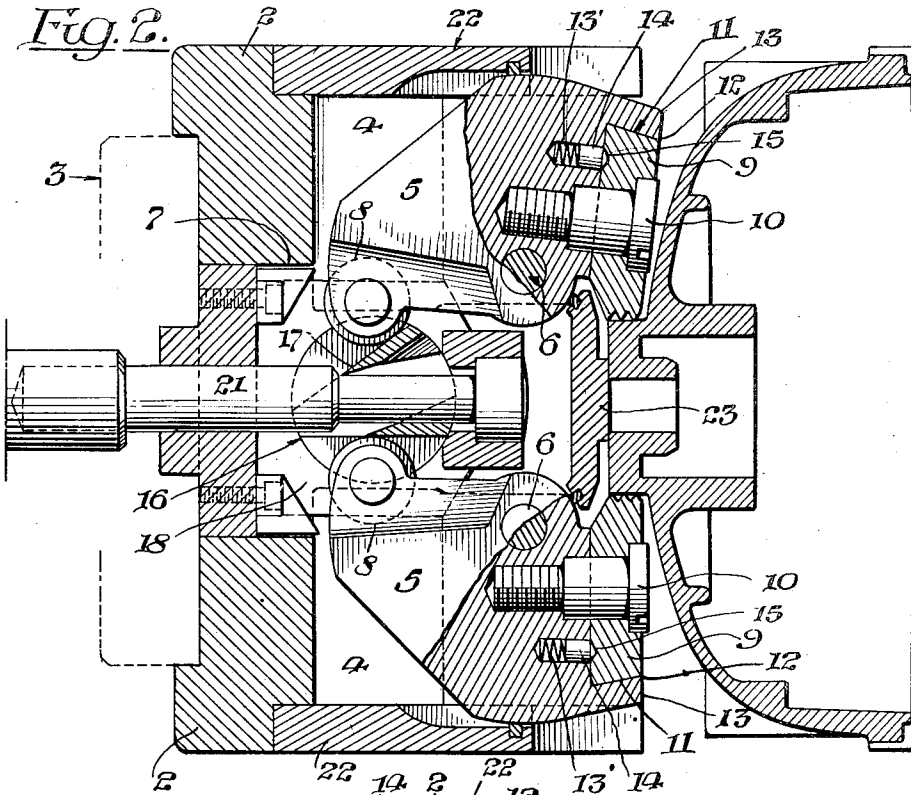
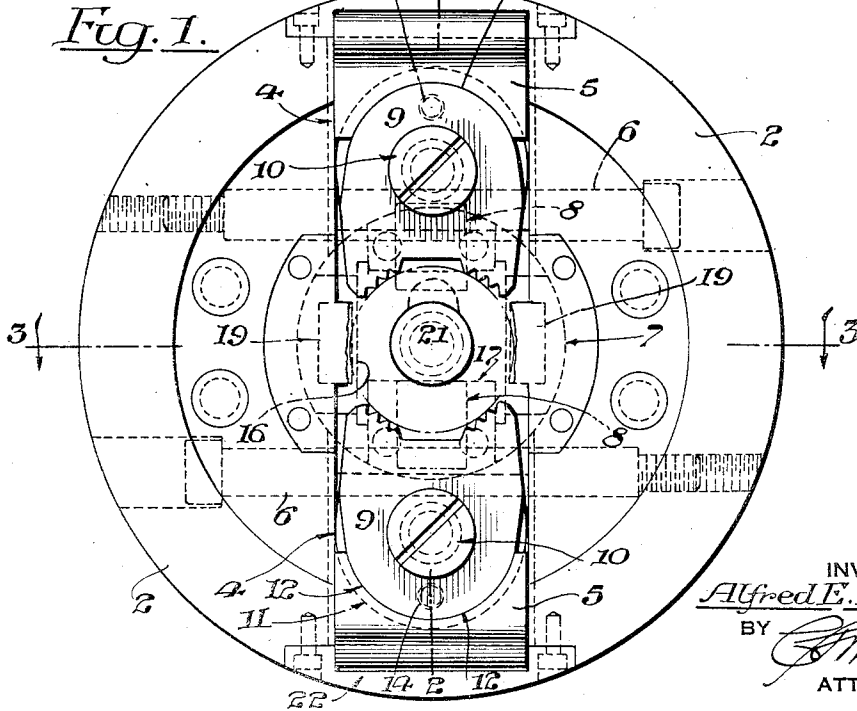


*Fig. 1.*



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*Fig. 3.*

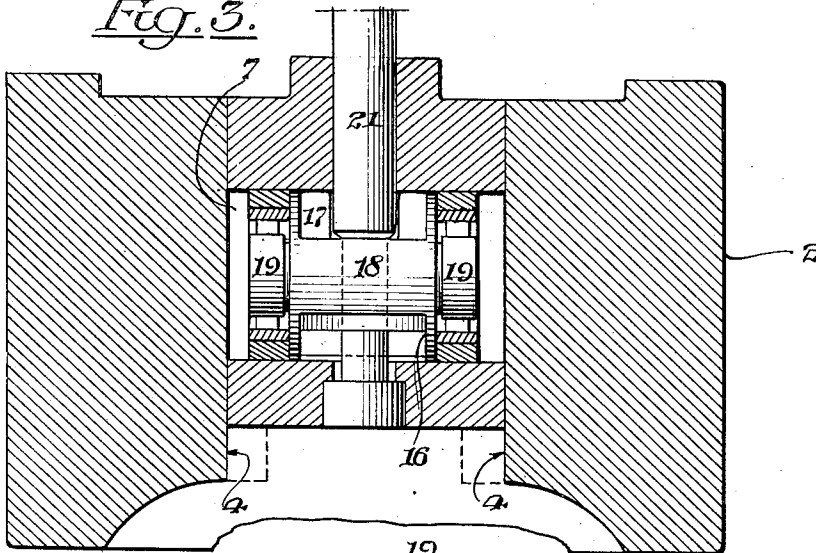


*Fig. 5.*

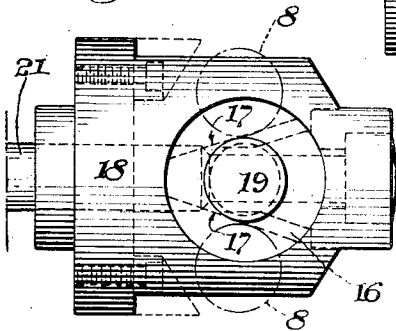


*Fig. 4.*

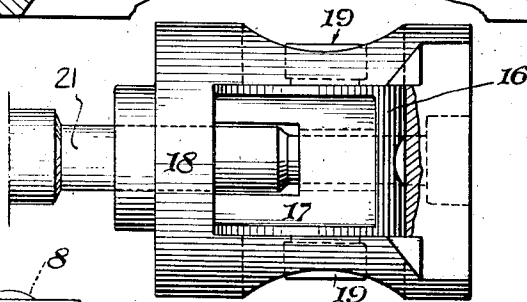


*Fig. 6.*

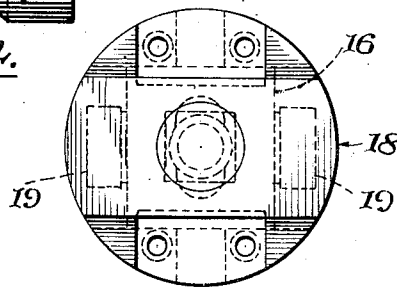


*Fig. 7.*

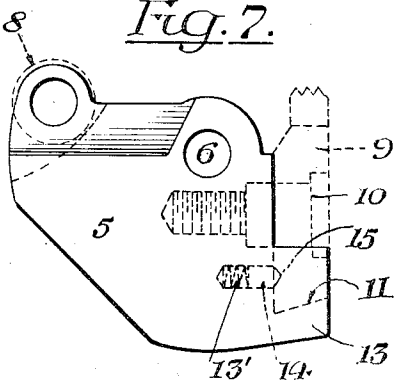


*Fig. 8.*

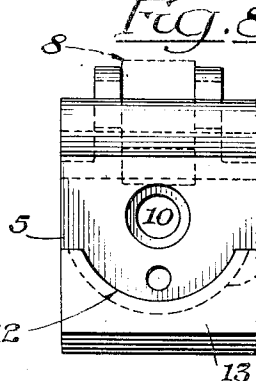
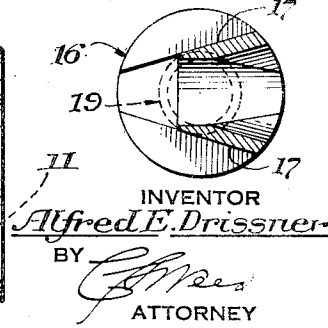


*Fig. 9.*



## UNITED STATES PATENT OFFICE

2,494,166

## FLOATING CHUCK

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a corporation of Ohio

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2 Claims. (Cl. 279—16)

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This invention relates to chucks, the object of the invention being to provide an improved chuck having a pair of floating jaws which can be used in place of two or three-jaw scroll chucks for gripping forgings or castings of any shape efficiently and with enormous pressure so as to hold the work securely in place and concentric with the inside core so that the work can be effectively machined, and which chuck is simple in construction and comparatively inexpensive to manufacture.

In the drawings accompanying and forming a part of this specification, Fig. 1 is a front view of this improved chuck.

Fig. 2 is a vertical sectional view thereof taken on line 2—2 of Fig. 1, and illustrating a piece of work gripped by the jaws.

Fig. 3 is a horizontal sectional view of the body of the chuck taken on line 3—3 of Fig. 1.

Fig. 4 is what may be considered a plan view of the carrier or housing for the cam.

Fig. 5 is a side view of Fig. 4.

Fig. 6 is a front end view of Fig. 4.

Fig. 7 is a detail view of the rocker arm and chuck jaw.

Fig. 8 is an end or front view of Fig. 7, and

Fig. 9 is a partly sectional view of the rotating cam.

Similar characters of reference indicate corresponding parts in the several views.

Before explaining in detail the present improvement and its mode of operation, I desire it understood that the present invention is not limited to the details of construction and arrangement of parts illustrated in the accompanying drawings since the invention is capable of other embodiments and that the phraseology employed is for the purpose of description and not of limitation.

This improved chuck comprises a body 2 adapted to be fastened to the spindle nose 3 in the usual manner and extends from the spindle nose to the front end of the chuck and is provided with two deep slots 4 in each of which a rocker arm 5 is pivoted by a bolt 6. This bolt not only acts as the pivotal means for the rocker arm but materially assists in adding reinforcement to the body in view of the deep slots necessary for the rocker arms.

These slots open into a central bore 7 of the chuck. Each of the rocker arms is provided with a roller 8 on its inner end and a floating jaw 9 at its opposite end to grip the work, the floating jaw being pivoted to the rocker arm by a bolt 55

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10 which holds the gripping plate or jaw against the front face of its rocker arm 5.

Each jaw 9 and its rocker arm is provided with cooperating inclined back taper faces 11 and with a radius comprising convex and concaved cooperating faces 12 (see Fig. 8) formed in the present instance by constructing the projecting lip 13 of the rocker arm as concaved and the tapered end of the jaw as convex although, obviously, this could be reversed.

This combined radius and back taper permits the gripping jaw to adjust itself readily to grip the hub or other outside diameter of the piece of work wherever it should happen to come, while the gripping face or teeth of the jaw substantially conform to the radius.

Each rocker arm has a spring 13' and plunger 14 adapted to engage a spot or indentation 15 in the gripping jaw to hold the jaw in a central position when no work is applied to the chuck.

The taper of the gripping jaw will pull the jaw against the inner face of the rocker arm during the gripping operation, thus insuring that the jaw hold very securely.

The rollers 8 of the rocker arms are in position to contact with a rotating cam 16 having a pair of angular surfaces 17. This cam rotates in the bore of a sliding housing 18 and has its bearing in the round bore of this housing so that it can rotate freely.

This cam is provided with suitable bearings as, for instance, roller bearings 19 which can be in one piece or with a plain bushing to take the place of the roller bearings so long as it acts as a suitable bearing in the housing and permit its cam to rotate freely so that the angular surfaces will adjust themselves to the rollers of the rocker arms.

This housing may be operated by a draw rod 21 which can be operated mechanically, hydraulically, or by air to pull the sliding housing with its rotatable cam in place against the rollers of the rocker arms. The draw rod 21 is reciprocally movable endwise, as indicated in Figure 2 to slide the hollow housing 18 and the cam 16 therewith.

As the cam can rotate in its housing or carrier, the contact of the angular surfaces 17 varies so that when the housing or carrier and its cam are pulled backward, the cam contacting the rollers of the rocker arms will spread the rollers apart and likewise the inner ends of the rocker arms and apply an enormous pressure to the chucking jaws and the work so as to hold the work securely in place wherever the

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jaws happen to locate on the piece concentric with the inside core and thus hold the work tightly during the machining operation. It will be observed in the construction of this improved chuck, the cam means for operating the pivoted rocking arms cooperates with the inner ends of the arms at the inner sides of the pivotal supports of the rocking arms on the body, in other words, at the inner sides of the pivots 6.

In practice, suitable closing plates 22 and 23 are provided for the purpose of keeping dust and dirt away from the chuck and from the rocker arms and cam.

It is to be understood that by describing in detail herein any particular form, structure or arrangement, it is not intended to limit the invention beyond the terms of the several claims or the requirements of the prior art.

Having thus explained the nature of my said invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I claim:

1. A chuck for holding a workpiece, said chuck comprising a supporting body, rocker arms carried by said body and each having an inner end and an outer end, a hollow housing slidable within said supporting body and having slots in the wall thereof through which the inner ends of the rocker arms extend, a cam freely rotatable in said housing and having cam surfaces engageable with the inner ends of the respective rocker arms, and means for sliding the hollow housing and the cam therewith to separate the inner ends of the rocker arms and thereby grip a workpiece positioned between the outer ends of the rocker arms.

2. A chuck for holding a workpiece, said chuck

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comprising, a supporting body, rocker arms carried by said body and each having an inner end and an outer end, a roller on each of said inner ends, a hollow housing slidable within said supporting body and having slots in the wall thereof through which the inner ends of the rocker arms extend, a cam having angular cam surfaces engageable by the rollers on the inner ends of the respective rocker arms, bearing means rotatably supporting said cam in said housing whereby the angular cam surfaces of the cam adjust themselves with the rollers on the rocker arms, and means for sliding the hollow housing and the cam therewith to separate the inner ends of the rocker arms and thereby grip a workpiece positioned between the outer ends of the rocker arms.

ALFRED E. DRISSNER.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

| Number    | Name          | Date           |
|-----------|---------------|----------------|
| 9,222     | Sloan         | Aug. 24, 1852  |
| 235,469   | Stephens      | Dec. 14, 1880  |
| 305,263   | Amidon        | Sept. 16, 1884 |
| 393,093   | Signall       | Nov. 20, 1888  |
| 398,481   | Whitney       | Feb. 26, 1889  |
| 421,718   | Ives          | Feb. 18, 1890  |
| 500,820   | Saunders      | July 4, 1893   |
| 601,513   | Hartness      | Mar. 29, 1898  |
| 881,373   | Burt          | Mar. 10, 1908  |
| 1,020,492 | Griggs et al. | Mar. 19, 1912  |

#### FOREIGN PATENTS

| Number  | Country   | Date          |
|---------|-----------|---------------|
| 100,603 | Australia | April 8, 1937 |