Jan. 9, 1923. 1,441,284.

R. A. JOHNSON ET AL.

SPRING CHUCK.

FILED JAN. 7, 1922.

Fig. 4.

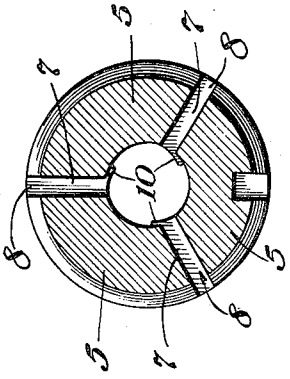


Fig. 2.

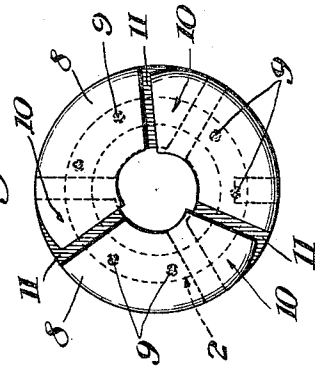


Fig. 5.

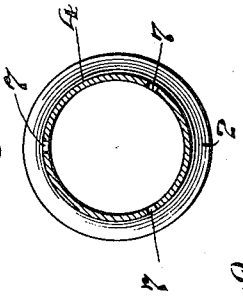


Fig. 1.

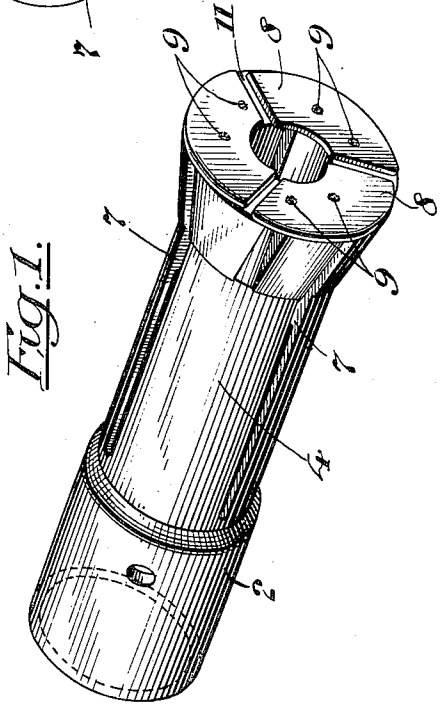
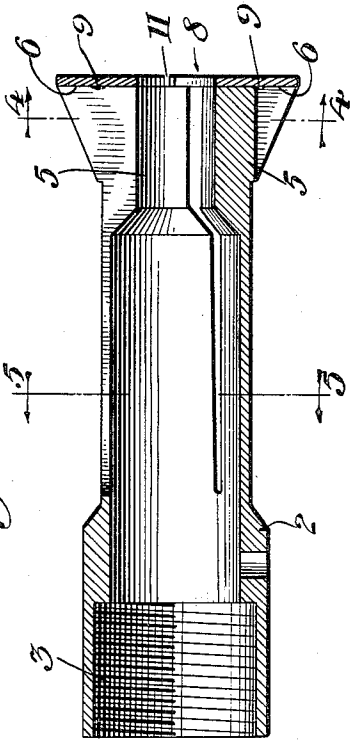


Fig. 3.



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Patented Jan. 9, 1923. 1,441,284

UNITED STATES PATENT OFFICE.

ROBERT A. JOHNSON AND CHARLES J. FANCHER, OF WINDSOR, VERMONT, ASSIGNORS TO THE NATIONAL ACME COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

SPRING CHUCK.

Application filed January 7, 1922. Serial No. 527,773.

To all whom it may concern:

Be it known that we, ROBERT A. JOHNSON and CHARLES J. FANCHER, both citizens of the United States, residing at Windsor, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Spring Chucks, of which the following is a specification.

This invention relates to spring chucks, an object thereof being to provide an improved chuck adapted to be used with various types of machines, such as for instance, metal working machines, and wherein the chuck is provided with protecting means to prevent the ingress of foreign matter between the spaced members or fingers of the chuck, such means being expansible and contractible with the chuck.

A further object of this invention is to provide an improved spring chuck having protecting plates for the end faces of the gripping members thereof, such plates being so mounted with relation to the chuck as to expand and contract with the gripping members and also form a protecting medium for the ends of the chuck.

Other objects of this invention will appear in the following description thereof, reference being had to the accompanying drawings forming a part of this specification, wherein like reference characters indicate corresponding parts in the several views, and wherein Fig. 1 is a perspective view of our improved spring chuck; Fig. 2 is a front end view thereof; Fig. 3 is a central longitudinal section; Fig. 4 is a cross section taken on line 4—4 of Fig. 3; and Fig. 5 is a cross section taken on line 5—5 of Fig. 3.

It has been found in practice that one of the main disadvantages in chucks heretofore used resided in the fact that during the operation of the machine chips or other foreign matter had a tendency to enter the spaces between the gripping members of the chuck, which often resulted in clogging the spaces between the members and interfering with the efficient and proper operation of the chuck. It is a purpose of the present invention to do away with these disadvantages and provide an effective and an efficient means for preventing the ingress of foreign matter into the spaces between the gripping members of the chuck.

The present improved means not only affords the necessary protection for the gripping members of the chuck, but also is expansible and contractible so as to operate in conjunction with such members.

Referring to the drawing, it will be seen that the present improved spring chuck comprises a tubular body member 2 having the usual bore therethrough and threaded as indicated at 3 to permit the chuck to be attached to the spindle or other part of the machine. As will be seen, the body member 2 is provided with forwardly extending fingers or projecting members 4, each terminating in the present instance, in enlarged gripping portions 5 having end faces 6. The several gripping members are spaced from each other by means of slots 7 and in order to prevent, during the operation of the machine, chips or other particles from entering these spaces between the adjacent gripping members or fingers, the latter are provided with spaced protecting plates 8.

In the present instance these protecting plates are mounted on the ends of the projecting members 4, and each plate 8,—referring particularly to Fig. 2,—is secured to one member and freely overlaps an adjacent member, the plate spanning the space between the respective members. In the present instance each plate 8 is segmental in construction and is spot-welded as at 9 to the end face 6 of a finger or member 4, and one end 10 thereof extends freely over the end face of an adjacent finger or member 4 but is not secured thereto. Thus, each protecting plate is secured to one projecting finger and overlaps an adjacent finger in such manner as to cover the space between the same, the plates being spaced from each other sufficiently as indicated at 11, so as to permit relative movement.

It will thus be readily seen that during the operation of the chuck, as the projecting members or fingers 4 are expanded and contracted, the protecting plates 8 will also be expanded and contracted in conjunction with the fingers to which they are attached. The plates at all times cover or bridge the spaces between the several fingers of the

chuck and therefore effectually prevent the ingress of particles between the fingers. Furthermore, these plates form a very efficient protecting medium for the ends of the chuck, and as a result of the improved and simplified construction, the effective diameter of the protecting means need be no greater than the effective diameter of the gripping end of the chuck.

We claim as our invention:

1. A spring chuck comprising a body portion and a plurality of spaced projecting fingers, and expansible and contractible means for bridging the space between the end faces of a pair of fingers.

2. A spring chuck comprising a body portion and a plurality of spaced projecting fingers, and expansible and contractible protecting means carried thereby for bridging the space between the end faces of a pair of fingers.

3. A spring chuck comprising a body portion terminating in a plurality of spaced projecting members, and radially movable means carried thereby for covering the spaces between the adjacent end faces of said members.

4. A spring chuck comprising a body portion terminating in a plurality of spaced projecting members, and means spaced one from another and carried thereby for covering the spaces between the adjacent end faces of said members.

5. A spring chuck comprising a body portion terminating in a plurality of spaced resilient members, and a plurality of plates carried thereby for covering the spaces between the adjacent faces of said members, said plates being shiftable one relatively to another.

6. A spring chuck comprising a body portion terminating in spaced members, and means carried thereby for covering a space between a pair of adjacent members and permanently shiftable with one of such members.

7. A spring chuck comprising a body portion terminating in spaced members, and expansible and contractible means comprising elements each carried by a member for covering a space between a pair of adjacent members and shiftable with said members.

8. A spring chuck comprising a body portion terminating in spaced members, and expansible and contractible means supported upon the outside of said members for covering the end spaces between the several members in all positions thereof.

9. A spring chuck comprising a body portion terminating in spaced resilient members, and means carried thereby for covering a space between a pair of adjacent members, said means being secured to one member and overlapping an adjacent member.

10. A spring chuck comprising a body portion terminating in spaced resilient members, and means carried thereby for covering a space between a pair of adjacent members, said means being secured to one member and slidably overlapping an adjacent member.

11. A spring chuck comprising a body portion terminating in spaced members, and means carried thereby for covering a space between a pair of adjacent members, said means being secured to the end face of one of such members and freely projecting over a part of the face of the adjacent member.

12. A spring chuck comprising a body portion terminating in spaced members, and a plurality of protecting plates, one secured to each member and extending over a part of an adjacent member, thereby to bridge the space between the same in all positions of the members.

13. A spring chuck comprising a body portion terminating in spaced members, and a plurality of protecting plates, one secured to each member and extending over a part of an adjacent member, thereby to bridge the space between the same in all positions of the members, said plates being shiftable toward and from each other conjunctively with said members.

Signed at Windsor, Vermont, this 5th day of January, 1922.

ROBERT A. JOHNSON.
CHARLES J. FANCHER.