Oct. 25, 1927. 1,646,850

R. S. BROWN

CHUCK MECHANISM

Filed June 4, 1925

Fig.1.

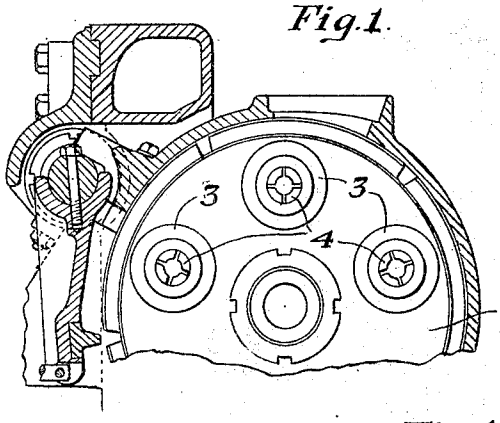


Fig.10.

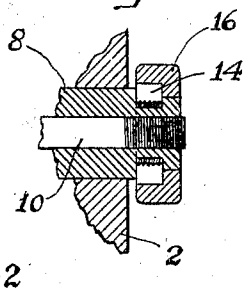


Fig.2

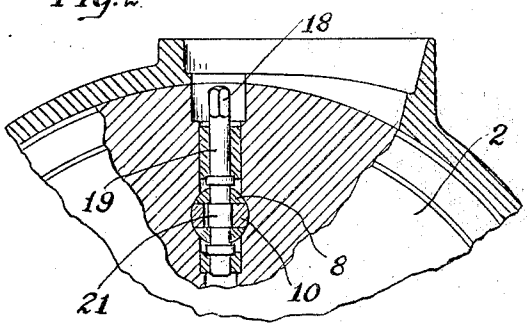


Fig.4

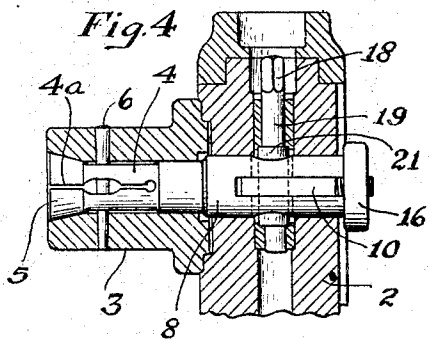


Fig.3.

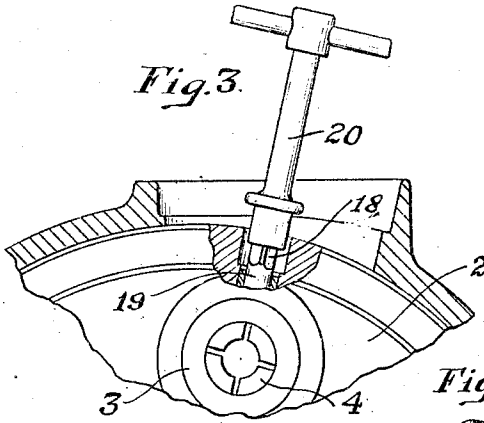


Fig.5.

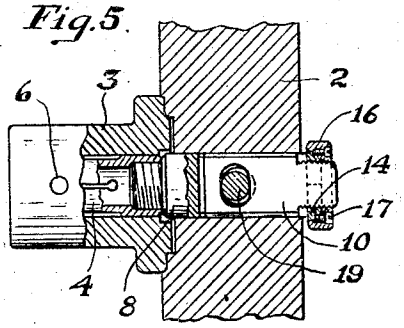


Fig.7.



Fig.8.

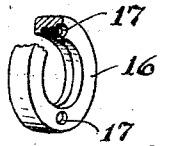


Fig.6.

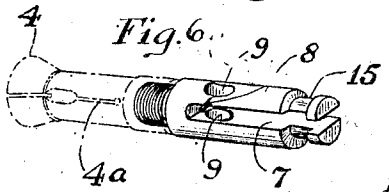
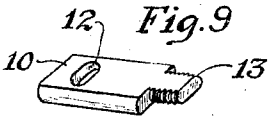


Fig.9



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Patented Oct. 25, 1927. 1,646,850

UNITED STATES PATENT OFFICE.

ROBERT S. BROWN, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE NEW BRITAIN MACHINE COMPANY, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

CHUCK MECHANISM.

Application filed June 4, 1925. Serial No. 34,869.

This invention relates to chuck mechanism for metal working machine.

In an application for patent for metal working machine filed jointly by John H. Montstream and Robert S. Brown, on July 18, 1924, Serial No. 726,720, the clutch mechanism described and claimed herein was disclosed, but, since said chuck mechanism was the sole invention of myself, the said Robert S. Brown, it is now made the subject-matter of this separate application.

I have a number of objects in view, among them being the provision in an appliance of the character set forth, the mechanism of which is quite simple in construction and positive and certain in action; the provision of a chuck which may be easily and positively adjusted. Other objects will be apparent as the specification proceeds. The device possesses advantages which will be set forth at length in the following description, wherein I have outlined in detail that form of embodiment of the invention which I have selected for illustration in the drawing accompanying and forming part of the present specification, to enable those skilled in the art to practice the invention. I am not restricted to such disclosure; I may depart therefrom in several respects within the scope of the invention as defined by the claims.

Referring to the drawing:

Fig. 1 is an elevation partly in section of the upper part of a structure involving the invention;

Fig. 2 is a similar view, on a larger scale of the upper portion of the construction;

Fig. 3 is a view somewhat similar to Fig. 2 and showing a wrench in position;

Fig. 4 is a view of a chuck and certain adjunctive devices;

Fig. 5 is a similar view, the section, however, being at right angles to that of Fig. 4;

Figs. 6 to 9 inclusive are details of the chuck mechanism;

Fig. 10 is a detail in section.

Like characters refer to like parts throughout the several views.

One or more chucks may be mounted on a chuck carrier or turret as 2, which is practically in the form of a drum, which may be rotated step by step to bring the article or work in the chucks in position to be acted on by tools (not shown). Each of the chucks may include a sleeve or chuck body 3 which receives within it a collet 4 having at its end a conical head 5 fitting a conical seat in the chuck body 3 and held from turning motion by a pin 6 extended through an elongated slot in the body of the collet 4. The body of the collet 4 is longitudinally slotted as at 4^a so that when drawn back against the conical seat in the chuck body 3, it will close and hold rigidly the work being acted on by the tools.

The body of each collet 4 may have a rear extension 8 in the form of a plunger secured thereto as by means of a screw thread. A block 10 may be adjustably secured to the collet 4 or to the extension 8 and may coact with means for actuating the collet. In the form shown, the body portion of the plunger 8 is longitudinally slotted as at 7 to receive the block 10 which slidingly fits the slot 7. The plunger has a passage or elongated slot 9 through the bifurcated section which slot registers in part with a transversely elongated slot 12 in the block 10. The block 10 may be provided at its rear end with an externally threaded portion 13 to receive an adjusting nut 14 (Fig. 7) which also rotatably fits around the reduced portion 15 on the plunger 8. To facilitate assembly the nut 14 may be of the split type and may be held against turning within a ring member 16 by screws 17.

A chuck operating shaft 19 is rotatably mounted in a part preferably fixed with relation to the chuck body 3 and, as shown, this shaft is mounted in suitable bearings in the turret 2. The shaft may extend through the passage 9 in the plunger 8 and through the transverse slot 12 in the block 10. That part of the actuating shaft 19 which lies in the slot 12 is eccentric to the axis thereof and preferably makes a relatively close fit with the opposite walls of the transverse slot 12. The passage or slot 9 is of sufficient size to permit the eccentric portion of the shaft to pass therethrough.

The operation of the device is as follows:

The actuating shaft 19 may be turned, as by means of a wrench 20, and in turning in one direction the eccentric on the shaft 19, acting upon one wall of the transverse slot 12, will draw the collet in a direction to cause the same to be closed. Rotation of the shaft in the opposite direction will cause the

eccentric to act on the opposite wall of the slot 12 and cause the chuck to be opened. When it is desired to make an adjustment of the collet jaw opening to compensate for wear or to provide for the reception of work articles of larger or smaller size, the block 10 may be moved in either direction in the collet plunger 8 by turning the nut 14 on the threaded end 13 of the block. Since the nut 14 is held against substantial longitudinal movement on the collet plunger by means of the reduced portion or spool 15, the block 10 will be moved further into or out of the slot 7, depending upon the direction of rotation of the nut 14.

It is usually best to adjust the setting of the block 10 so that the collect 4 will be in the desired gripping position when the eccentric portion on the actuating shaft 19 is substantially on a dead center. In that case there will be substantially no tendency for the collet to open until the shaft 19 is intentionally turned.

What I claim is:

1. In a chuck, a chuck body, a reciprocable member including a collet fitting said chuck body, a block having opposed bearing surfaces therein, adjustable means for securing said block and said reciprocable member together at their rear ends, and an actuating shaft having means for engaging said opposed bearing surfaces on said block for advancing and retracting said reciprocable member.

2. In a chuck, a chuck body, a reciprocable member including a collet fitting said chuck body, said reciprocable member having a longitudinally slotted portion, a block slidably fitting in said slotted portion, means for adjusting said block to and fro in said reciprocable member, and means engaging said block for moving the same and said reciprocable member in both directions to open and close the collet.

3. In a chuck, a chuck body, a reciprocable member including a collet fitting said chuck body, a bearing block for said reciprocable member, one of said two last mentioned members being threaded and the other having abutment means, a nut to engage said threaded member and said abutment means for adjustably holding said bearing block and reciprocable member together, and means engaging said bearing block for reciprocating said collet.

4. In a chuck, a chuck body, a collet fitting said chuck body, a plunger secured to and extending rearwardly of said collet, a block carried by and adjustable to and fro relatively to said plunger, and means engaging said block for positively reciprocating said plunger and collet to and fro in the different positions of adjustment of said block, and means at the rear end of said plunger for adjusting said block relatively to said collet.

5. A chuck of the class described comprising a head, a tapered opening therein, a tapered collet cooperating with the tapered wall for expansible and contractible action, a plunger connected to said collet and having a slot in its free end, a block longitudinally movable in the slot and having one end threaded, said plunger also having an annular groove near its free end, a nut rotatable in said groove and threaded on the threaded end of said block, the slotted portion of the block and the plunger having registering slots, the slot in the block being formed transversely thereof, and a shaft passing through the several transverse slots and having an intermediate eccentric portion engageable with the walls of the slot in the block, whereby the turning of the shaft reciprocates the plunger and the collet connected thereto.

In testimony whereof I affix my signature.

ROBERT S. BROWN.