

May 27, 1952

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2,598,423

NIPPLE CHUCK

Filed Nov. 24, 1950

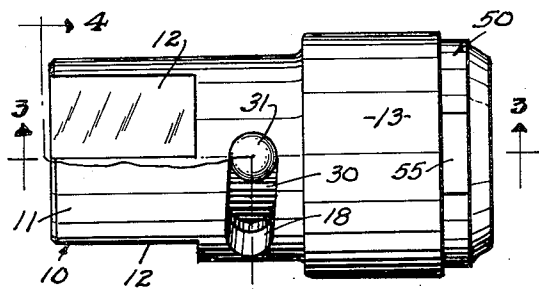


Fig-1

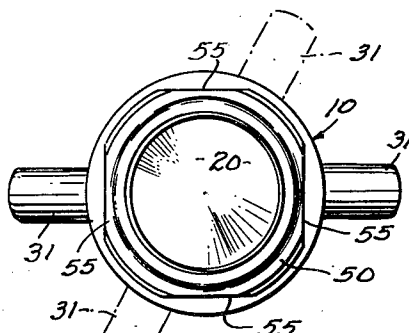


Fig-2

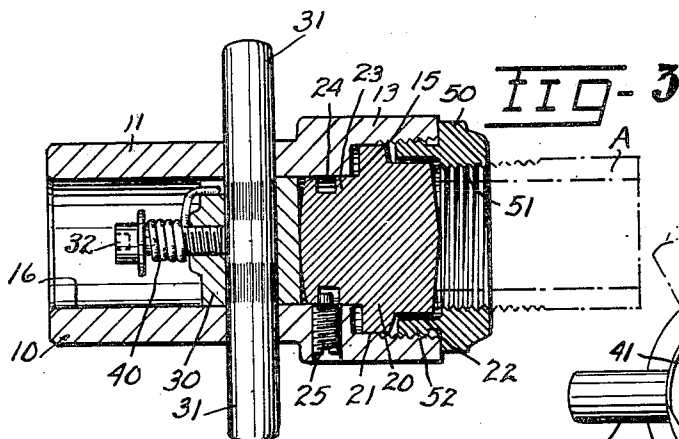


Fig-3

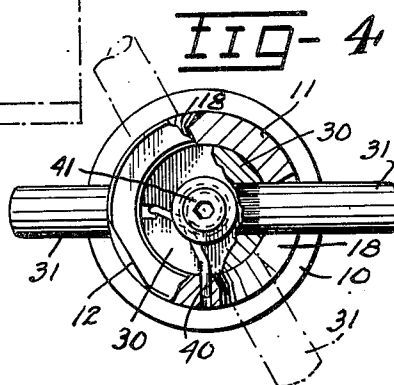


Fig-4

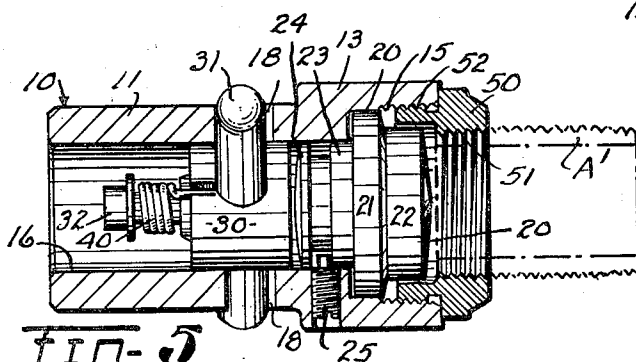


Fig-5

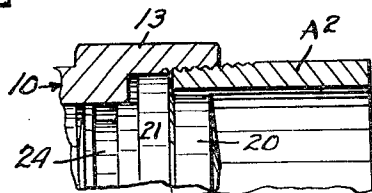


Fig-6

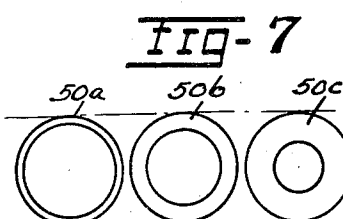


Fig-7

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2,598,423

NIPPLE CHUCK

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Application November 24, 1950, Serial No. 197,468

4 Claims. (Cl. 279-7)

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This invention is concerned with a device adapted to be mounted in an ordinary chuck and carry a short partially threaded nipple, to enable the remaining thread to be readily cut on the nipple. The device comprises a barrel adapted to be mounted in the chuck and adapted to carry any one of a number of bushings with internal threaded openings of different diameters to receive different size nipples.

Back of the opening through the bushing is an abutment against which the nipple blank threaded in the bushing turns by the force of the threading operation, which results in the nipple being tightly jammed in the device. To enable the nipple to be then readily removed at the end of the threading cut, I provide means for releasing the abutment in the barrel so that it may play back slightly away from the nipple and relieve the end thrust thereon.

My invention includes a device having the characteristics mentioned, and also the more particular embodiment thereof illustrated in the accompanying drawing and hereinafter described in detail.

In the drawing, Fig. 1 is a side elevation of my nipple chuck; Fig. 2 is an end view thereof; Fig. 3 is a longitudinal section showing the partially threaded nipple inserted ready for action, the plane of this section being indicated by the line 3-3 on Fig. 1; Fig. 4 is a cross section on the device in the offset planes indicated by the lines 4-4 on Fig. 1; Fig. 5 is a longitudinal section through the barrel and nipple showing the internal parts in elevation and indicating in broken lines the finished nipple; Fig. 6 is a fragmentary longitudinal section illustrating the mounting of a nipple of the maximum size in place of one of the bushings; Fig. 7 is a diagram illustrating the interchangeable bushings which may be mounted in the nipple chuck barrel.

In Figs. 1 to 6, 10 indicates the barrel of my device having a substantially cylindrical portion 11 adapted to be mounted in an ordinary chuck and if desired provided with flattened portions shown at 12 in Fig. 1, to enable it to be more firmly gripped. Near its other end, this barrel is enlarged to form a head 13 having an internal thread about a recess 15 of greater internal diameter than the bore 16 of the chucking portion of the barrel.

Mounted within the barrel recess 15 is the abutment 20. This is a round block having rabbets on each side of its intermediate cylindrical portion 21 which has a sliding fit in the head 13. The reduced front portion 22 is spaced from the thread

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in the head 13, the reduced rear portion 23 has a sliding fit in the barrel bore 16. This portion 23 of the abutment block has an annular groove 24 in which seats the end of a pin 25 threaded into the wall of the head 13. The end of this pin is of less diameter than the width of the groove 25 so that the abutment block is capable of a limiting play longitudinally.

Back of the abutment block is a cylindrical holding block 30 which has an easy running fit in the bore 16. Extending diametrically through this holding block is a radial rod 31 which extends through inclined slots 18 in the wall of the barrel. The result of this is that when the rod 31 is turned relative to the barrel it is cammed longitudinally by the inclined wall of the slots and thus may carry the holding block away from the abutment block. As shown, the rod is clamped in the holding block by a set screw 32.

A suitable spring acts on the holding block and rod 31 to tend to keep the rod in its most advanced position, that is at that end of the slots 18 which is nearest the abutment block. As shown this spring comprises a coiled spring 40 mounted on the screw 32 threaded in the holding block, one end of the spring being secured to the holding block and the other to the barrel.

As heretofore stated, the barrel may carry any one of a number of bushings having different internal threads. One of such bushings is shown at 50 in various views, and a set of them is indicated at 50a, 50b and 50c in the diagram, Fig. 7. Each bushing has an internally threaded portion 51 and externally threaded reduced extension 52.

The external threads on the extensions of all of the bushings are of the same diameter and thus any bushing is adapted to screw into the head 13 with its extension occupying the space between the internal thread in the head and the exterior of the abutment portion 22. Beyond the outer side of the extension 52 the bushing is of considerably greater size to provide proper strength and it has flats 55 at its edge to enable the application of a wrench. The internal threads in each of the bushings, as well as the internal thread in the head 13, is of standard size for various pipes.

It will be noticed that the internal threads of the bushings 50 and head 13 are each of materially less axial length than the tapered thread on the partially formed nipple. The bushing threads engage the nipple blank freely enough to enable such blank to be readily turned into place by the operator's hand until the blank engages

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the abutment 20. Thereafter the axial thrusts on the blank due to its rotation under cutting pressure is always taken by the abutment, which is now immovably held in the barrel. When the nipple is thus turned in far enough to impinge heavily against this block it results that the outer surface of its threads bear tightly against the outer surface of the bushing threads and thus the nipple is locked tightly in position.

As the threading progresses, the nipple blank may turn by the threading action, thus screwed more tightly into the bushing 50 and against the abutment block which is held in its forward position by the holding block and rod 31 under the action of the spring 40.

After the threading has been completed and it is desired to release the finished nipple (shown in broken lines A' in Fig. 5) it is only necessary for the operator to grasp the projecting ends of the rod 31 and turn it against the action of the spring 40. In this movement the rod passes to the other end of the slots, as indicated by the broken lines in Figs. 2 and 4. This cams the holding block backwardly and releases the abutment block 20, which is thus free to play back the slight distance allowed by the holding block and the inner end of the pin 25. This release of the abutment block allows the finished nipple to be readily unscrewed manually out of the device.

When the largest size of nipple is to be threaded no bushing is employed but the nipple blank itself is mounted in the internal threads ordinarily occupied by a bushing. This is illustrated in Fig. 5, where such large size nipple is shown in longitudinal section at A². In this case, the inner end of the nipple when fully mounted in the head 13 abuts directly against the enlarged portion 21 of the abutment 20.

It will be noticed from Figs. 3, 5 and 6 of the drawing that the rear end of the abutment block 20 is crowned, thus causing the holding block 30 to have almost a point bearing against the abutment block, preventing undue friction in the operation of the holding block. It will also be seen that the front faces of the portions 22 and 21 of the abutment block are slightly beveled. This causes any nipple which engages these faces to bear against it merely at the inner circular edge of the nipple, preventing any undue binding in these regions and eliminating the possibility of the pressure on the end of the nipple damaging the final turn of its thread.

It will be seen from the disclosure in the drawings and the above description that my nipple chuck is of very simple construction and is adapted for ready mounting in the chuck of any pipe working machine or other power device whereby it may be rotated.

It stands at all times ready to receive one size of nipple blank, and may be readily changed for another size desired merely by substituting any of the other bushings of the set, as the internal abutment and operating mechanism are equally well adapted for all sizes of pipe. The release of such abutment is easily effected manually by the projecting operating rod which would stand in front of the chuck in which the barrel is mounted.

I claim:

1. In a nipple chuck, the combination of a hollow barrel having a bore having a head with an internally threaded recess of greater diameter than the bore, an abutment block mounted in the barrel having an enlarged cylindrical portion in-

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mediately located and having a cylindrical portion of less diameter on opposite sides of the enlarged portion, a bushing having an internal thread and having an extension with an external thread, said extension occupying the space between the outer one of the reduced portions of the block and the threaded interior of the head, a radial pin carried by the head and having its inner end loosely occupying a recess in the inner reduced portion of the block, a cylindrical block rotatably mounted in the bore of the barrel back of the abutment block, a rod passing diametrically through said cylindrical block and through inclined slots in the wall of the barrel, and a spring within the barrel connected one end to the barrel and at the other end to the cylindrical block and tending to maintain the rod at the front end of the slots through the barrel.

2. In a nipple chuck, the combination of a hollow barrel carrying an internal thread at the forward end thereof to receive a partially threaded nipple blank, a nipple abutment block mounted within the barrel for axial movement relative thereto, means carried by the barrel for holding the block therein with a limited axial movement, a cylindrical block within the bore of the barrel behind the first block and providing an abutment, therefor, a rod extending diametrically through the cylindrical block and passing outwardly of the nipple chuck through inclined slots in the wall of the barrel, the inclination of the slots being such as to prevent rearward axial movement of the cylindrical block consequent upon the exertion of axial pressure thereon by the nipple through the medium of the abutment block and a spring tending to keep the rod in the forward position of the slots whereby the rod may be manually moved in the slots in opposition to the spring to cam the cylindrical block backwardly to relieve pressure between the blocks and between the abutment block and the nipple.

3. In a nipple chuck, the combination of a hollow barrel having an axially extending bore, said barrel having an internal thread at one end thereof to receive a partially threaded nipple blank, a block mounted within the barrel for rotary and axial movements relative thereto and providing an abutment for the inner end of a nipple, resilient means mounted within the barrel and having a connection operative on the block and normally acting to urge the block axially toward the threaded end of the barrel, means including said connection to prevent axial inward movement of the block by forces tending to move the nipple inward, and manually operable means to move said connection inwardly against the action of the spring and free the block for inward movement, whereby any pressure between the block and a nipple will be released to permit withdrawal of the nipple from the barrel.

4. In a nipple chuck, a barrel having an axially extending bore and an internal thread at its forward end thereof to receive a partially threaded nipple blank, an abutment block mounted in said bore for both axial and rotary movements relative to the barrel, said block having crowned forwardly facing surface adapted to abut a nipple positioned in said threads and a second surface facing the rear of the barrel, means to limit the axial movement of the block in either direction to a predetermined distance, a second block mounted within said bore for axial and rotative movement relative thereto and having a forwardly facing surface to engage the second surface of the abutment block, one of said last-

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named surfaces being crowned, said barrel having a pair of inclined slots, means carried by the second block and coacting with the slots to cause rotary movement of the second block to move it axially into and out of engagement with the first block depending upon the direction of such movement, and resilient means normally acting to rotate the second block in a direction to move it toward the first block and manually operable means to rotate the second block in the opposite direction against the action of the resilient means and thereby disengage it from the first block.

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