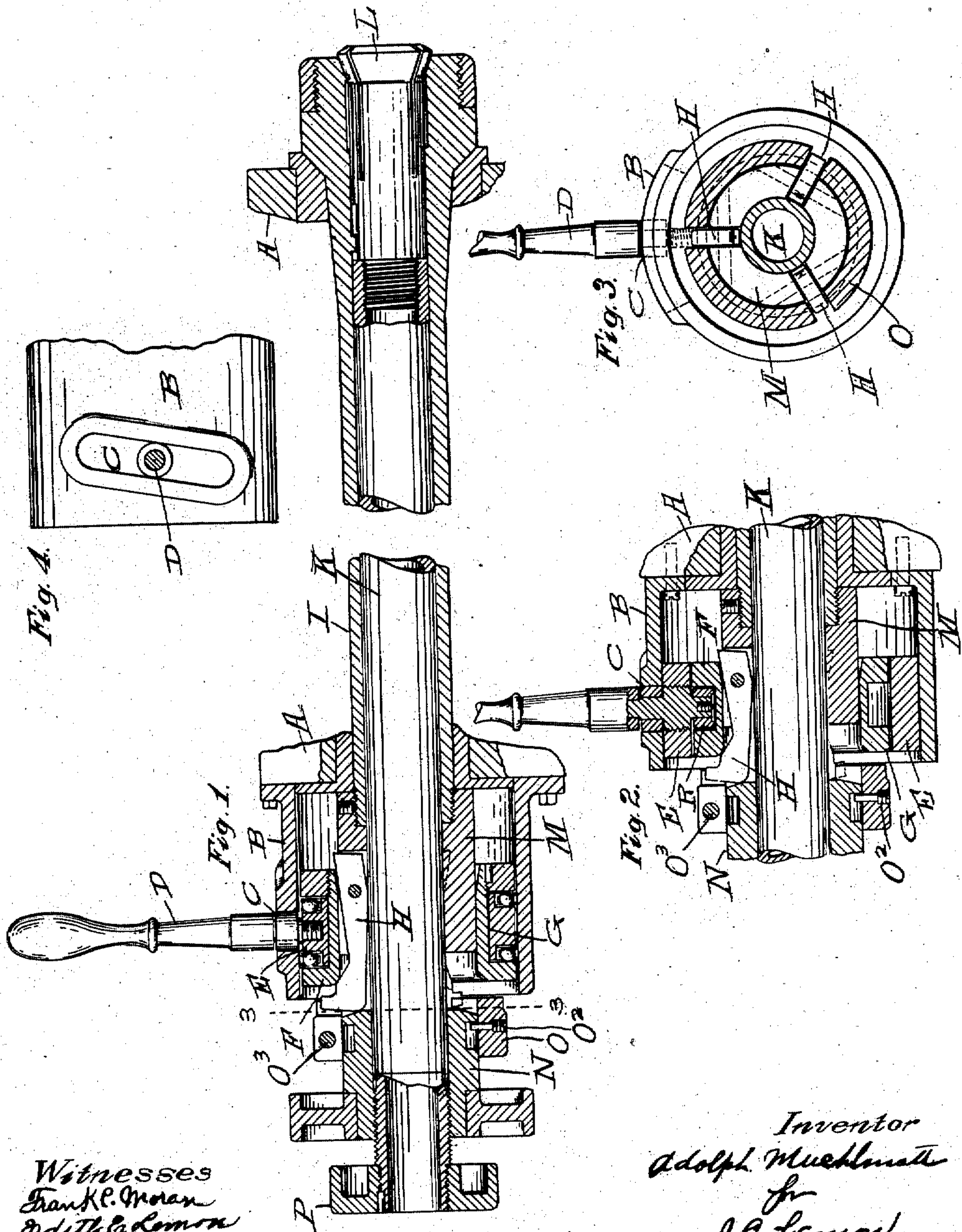


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MECHANICAL OPENING AND CLOSING SPRING CHUCK.
APPLICATION FILED NOV. 6, 1909.

985,536.

Patented Feb. 28, 1911.



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UNITED STATES PATENT OFFICE.

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MECHANICAL OPENING AND CLOSING SPRING-CHUCK.

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Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed November 6, 1909. Serial No. 526,598.

To all whom it may concern:

Be it known that I, ADOLPH MUEHLMATT, a citizen of the United States of America, and resident of No. 807 Maple avenue, Newport, county of Campbell, and State of Kentucky, (post-office address Fifth and Elm streets, in the city of Cincinnati, county of Hamilton, and State of Ohio,) have invented an Improvement in Mechanical Opening and Closing Spring-Chucks; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention relates to mechanical opening and closing spring chucks, and it has for its object the improvement in the construction of such devices whereby they are simplified and rendered more efficient.

The novelty of my invention consists in the combination and sub-combination of the parts as will be hereinafter set forth and specifically pointed out in the claims.

In the drawings: Figure 1, is a partial vertical longitudinal section of my mechanical opening and closing spring chuck. Fig. 2, is a section through the working parts of a modified form. Fig. 3, is a section on line 3, 3, of Fig. 1. Fig. 4, is a top view of the slot in which the hand lever works.

A, represents a portion of the machine to which my mechanical opening and closing chuck is attached.

B, is the housing in which the principal operating parts are contained.

C, is the slot in which the lever D, works.

E, is a ring to which the lever D, is attached. Inside of the ring E, is a ring F, which has a groove G cut in it. The outside diameter of the ring F, is made slightly smaller than the internal diameter of the ring E, in which it is placed, also the groove G is made wider than the diameter of the roller R, that plays in it. This is to obviate the possibility of excessive friction in these parts. The ring F operates on the fingers H, to open and close the chuck.

I is the spindle K, the quill, L the split chuck.

The ring M, to which the fingers H are

pivoted is screwed on to the end of the spindle I. The ring N, is screwed to the inner end of the quill K, to serve as a tension ring against which the fingers H abut to shift the quill to close the chuck. In order to lock the tension ring in position after it is adjusted for the proper closing of the chuck, and to prevent the tension ring from unscrewing, I provide as follows. Around the ring N, a split ring O, is attached, near the end of the ring N, where the fingers H, are. The split ring O, has a set screw O², one end of which penetrates an annular groove in the ring N. This groove permits of a limited adjustment of the split ring O. The inner edge of the split ring O is provided with slots b, b, to correspond to the number of fingers H, and at corresponding distances apart, and when the tension ring has been properly adjusted, the split ring is turned to bring the slots b into register with the ends of the fingers H and the split ring O, is clamped rigidly in position by means of the set screw O³. In this way, the ends of the fingers H when closed come within the slots b, b, and the ring O and the tension ring are locked to the ring M and the spindle.

The hand wheel P, on the end of the quill K, is for screwing the chuck L, on to the quill. In my chuck the split chuck L, is screwed up against a shoulder on the quill K. The adjustment is made in the ring N.

In the preferred form of my device ball bearings have been in the ring E. In the modified form shown in Fig. 2, a roller R, works in the ring F. In the several views the handle D, is shown in the middle of its throw.

My chuck can be opened and closed when the quill is revolving or when idle. It can also be opened and closed when the quill is revolving forward or backward.

The operation of my device is as follows: A piece of stock to be operated upon is placed in the chuck L, the split ring O is loosened; the tension ring N adjusted the proper distance for the proper closing of the chuck under the thrust of the fingers H and the lever D is pulled forward pushing the

fingers H, against the inclined portion of the ring N, forcing the quill back and closing the chuck L, clamping the stock. When the work has been performed the handle D, is
5 thrown back and the stock taken out.

The construction shown forms a very powerful, positive and effective means for closing the chuck without stopping the movement of the spindle. By pulling forward the lever D, the ring E is given a powerful screw movement, which movement is transferred without binding to the ring F, and the ring F is propelled over the outer portion of the fingers to thrust them against
10 the tension ring and thus to shift the quill and lock the chuck. When the fingers are thus closed, the tension between the ring N and the ends of the fingers is inside the pivot points of the fingers so that the fingers
20 are held locked without the aid of the ring F, and the ring F is loose and free from all strain. In this way, a most effective and powerful means is provided for shifting the quill with reference to the spindle, and this
25 construction can be used most effectively for heavy and massive constructions, where the clutches now in use are entirely impracticable.

Having described my invention what I
30 claim is—

1. In a device of the character specified, a pair of cooperating rotating members, the one movable lengthwise with reference to the other, fingers pivotally mounted on one
35 member and adapted to bear upon the other to shift the one with reference to the other, and a loose ring encircling and engaging said fingers on the outer sides thereof, with means for shifting the ring to close the fingers, for the purpose specified.
40

2. In a device of the character specified, a pair of cooperating rotating members, a housing in which said members are mounted, one member movable lengthwise with reference to the other, fingers pivotally mounted
45 on one member and adapted to bear upon the other, a loose ring embracing said fingers, and a lever to actuate said ring, with a diagonal slot in the housing through which
50 said lever passes whereby the oscillation of the lever will shift the ring to close the fingers.

3. In a device of the character specified, a pair of cooperating rotating members, a
55 housing in which said members are mounted, one member movable lengthwise with reference to the other, fingers pivotally mounted on one member and adapted to bear upon the other, a loose ring embracing said fingers, provided with an external annular groove, an actuating ring seated in said groove and a lever secured to said actuating ring, with a diagonal slot in the housing through which said lever passes whereby the

oscillation of the lever will shift the ring to
65 close the fingers.

4. In a device of the character specified, the combination with a housing and a hollow spindle mounted to rotate therein, and a quill mounted in said spindle and movable
70 lengthwise thereof, with a spring chuck secured to the quill, a tension ring secured to the quill, a plurality of fingers pivotally secured to the spindle and adapted to bear on said tension ring to shift the quill, a loose
75 ring encircling and engaging said fingers on the outer sides thereof, with means for shifting the ring to close the fingers, for the purpose specified.

5. In a device of the character specified,
80 the combination with a housing and a hollow spindle mounted to rotate therein, and a quill mounted in said spindle and movable lengthwise thereof, with a spring chuck secured to the quill, a tension ring adjustably
85 secured to the quill, a plurality of fingers pivotally secured to the spindle and adapted to bear on said tension ring to shift the quill, a loose ring embracing said fingers, and a lever to actuate said ring with a diagonal
90 slot in the housing through which said lever passes whereby the oscillation of the lever will shift the ring, for the purposes specified.

6. In a device of the character specified, the combination with a housing and a hollow spindle mounted therein, and a quill
95 mounted in said spindle and movable lengthwise thereof, with a spring chuck secured to the quill, a tension ring adjustably secured to said quill, a ring secured to said spindle
100 provided with a plurality of longitudinal slots, with fingers pivotally mounted on the ring in said slots, with their outer ends adapted to bear upon the tension ring, a loose ring mounted on said slotted ring to
105 close said fingers, and means for shifting the ring, for the purpose specified.

7. In a device of the character specified, the combination with a housing and a hollow spindle mounted therein, and a quill
110 mounted in said spindle and movable lengthwise thereof, with a spring chuck secured to the quill, a tension ring adjustably secured to said quill, with means for locking the tension ring in place, a ring secured to said
115 spindle provided with a plurality of longitudinal slots, with fingers pivotally mounted on the ring in said slots, with their outer ends adapted to bear upon the tension ring, a loose ring mounted on said slotted ring to
120 close said fingers, and means for shifting the ring, for the purposes specified.

8. In a device of the character specified, the combination with a housing and a hollow spindle mounted therein, and a quill
125 mounted in said spindle and movable lengthwise thereof, with a spring chuck secured to the quill, a tension ring adjustably

secured to said quill, a ring secured to said spindle, provided with a plurality of longitudinal slots, with fingers pivotally mounted on the ring in said slots, with their outer
5 ends adapted to bear upon the tension ring, a loose ring mounted on said slotted ring to close said fingers, and a lever to actuate said ring, with a diagonal slot in the housing

through which said lever passes whereby the oscillation of the lever will shift the ring, 10 for the purpose specified.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
