F. F. CLARKE.

AUTOMATICALLY RELEASING CRANK.

APPLICATION FILED JUNE 25, 1913.

1,115,652. **Patented Nov. 3, 1914.**

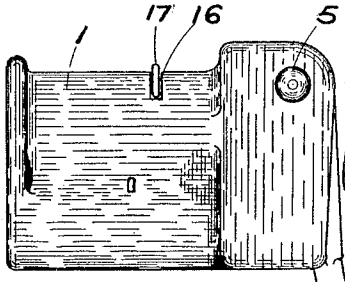


FIG 1

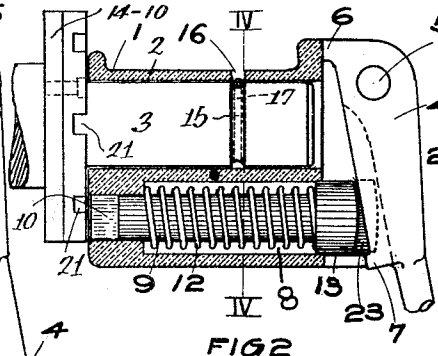


FIG 2

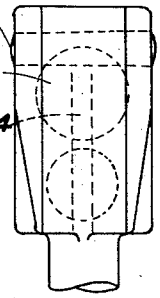


FIG 3

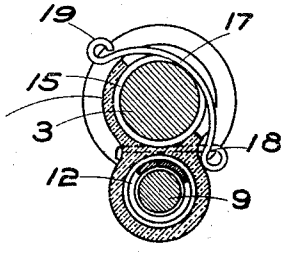


FIG 4.

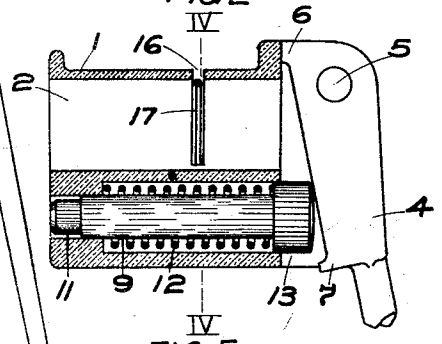


FIG 5

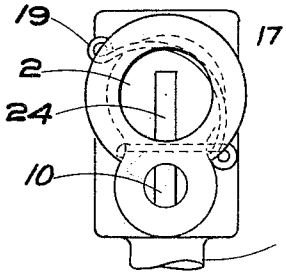


FIG 6.

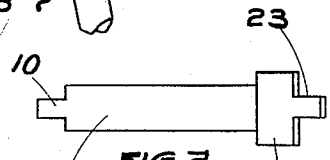


FIG 7.

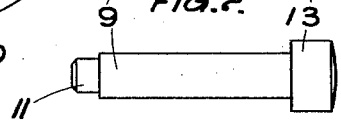


FIG 8.

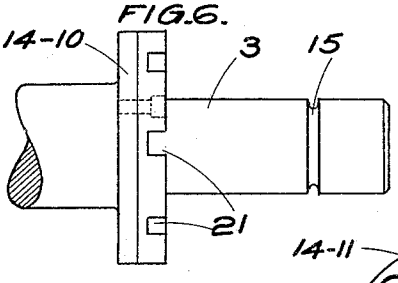


FIG 9.

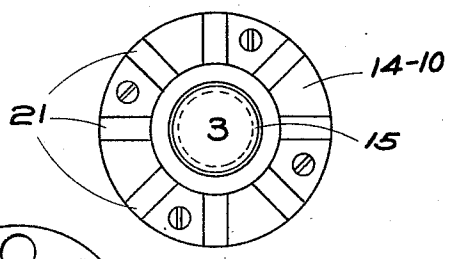


FIG 10

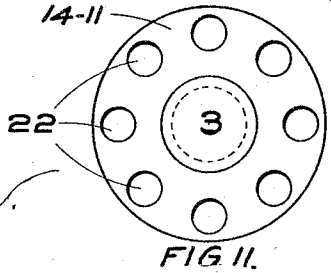


FIG 11.

WITNESSES

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UNITED STATES PATENT OFFICE.

FREDERICK F. CLARKE, OF FRANKLIN, PENNSYLVANIA, ASSIGNOR TO COLBURN MACHINE TOOL COMPANY, OF FRANKLIN, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

AUTOMATICALLY-RELEASING CRANK.

1,115,652. Specification of Letters Patent. Patented Nov. 3, 1914.

Application filed June 25, 1913. Serial No. 775,757.

To all whom it may concern:

Be it known that I, FREDERICK F. CLARKE, a citizen of the United States, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Automatically-Releasing Cranks, of which the following is a specification.

My invention relates to improvements in automatically-releasing cranks, the object, construction and application of which are herein set forth with sufficient clearness to enable those skilled in the art to which it appertains, to make and use the same.

In the construction of machines of various kinds, and more especially certain classes of machine tools, such as boring and turning mills, certain feed and adjusting shafts which are normally power-actuated, are also adapted to be manually-actuated by means of a crank arranged to be applied to said shafts. As a specific example of such shafts, I refer to those by which the heads or rams of boring and turning mills are moved upon the cross-rail whereon they are mounted. The outer end of such shafts projects through or beyond the end of the cross-rail, and it is to said projecting end that my automatically-releasing crank is adapted to be applied, for the purpose of manually revolving the shaft.

My improved crank is so constructed that it possesses the very desirable characteristic of automatically releasing the shaft so that it will hang loosely thereon, just as soon as the hand is removed at the completion of the manual actuation. In this automatically-released position, the crank remains stationary when the shaft to which it is applied is power-actuated, and this eliminates all danger and inconvenience therefrom, whereas if it did not thus release the shaft, it would be swung or revolved thereby and might cause injury to the operative, in case he inadvertently moved into a position in proximity thereto.

The construction of my improved crank is clearly shown in the drawings, in which:

Figure 1 is a side elevation of my complete crank; Fig. 2 is a central, vertical, longitudinal section thereof; Fig. 3 is an end view of the crank-lever end; Fig. 4 is a section on line IV—IV of either Fig. 2 or 5, in which the shaft is shown in position within the socket; Fig. 5 is a central, vertical, longitudinal section of a crank having a modified form of engaging-bolt; Fig. 6 is an end view of the socket end of Figs. 1, 2 and 3; Figs. 7 and 8 are elevations of the two forms of shaft-engaging bolts; Fig. 9 is an elevation of an end of a shaft, arranged for the application of my crank; Fig. 10 is an end view of Fig. 9; Fig. 11 is the modified form of shaft-end adapted for use with the form of bolt shown in Figs. 5 and 8.

As will be readily understood from an inspection of said drawings, my improved crank consists of a head 1, which comprises a socket 2 for the reception of the round or cylindrical end of a shaft 3. The outer end of the head 1 is formed into a slot or housing for the reception of one end of the crank-lever 4, which is pivotally secured in said housing by means of a pin 5. The crank-lever is free to oscillate upon said pin within certain limits; the limit in one direction being the contact of lug 6 with the juxtaposed face of the head 1, and in the other, the contact of lug 7 with the face of said socket, which is in juxtaposition to said lug 7. Said head also comprises a socket 8, for the reception of a longitudinally-movable engaging-bolt 9, provided with an engaging-tongue 10, of the form shown in Figs. 2, 3, 6 and 7, or an engaging-pin 11, as shown in Figs. 5 and 8. Socket 8, near the outer end, is so formed that bolt 9 fits closely therein, but the remaining portion of said socket is enlarged for the reception of a spiral spring 12, which encircles bolt 9 and bears against the head 13, upon the outer end of said bolt, and holds the same normally out of engagement with the engageable element upon shaft 3,—14—10 or 14—11, as the case may be. In Figs. 1, 2 and 5, said bolt is shown in the non-engaging or released position in which it is normally held, as aforesaid, by said spring 12.

For the purpose of removably securing head 1 upon shaft 3, I form an annular groove 15 around the crank-receiving portion of said shaft. I also intersect socket 2 with a slot 16, for the reception of a spring 17, which is positioned within said

slot and passes tangentially across one side of said socket. One end of said spring is rigidly secured to head 1 at 18, and the other end 19 thereof is formed into an eye or any other shape convenient for manipulation. When the crank is to be applied to the shaft, head 1 is grasped in the hand so that the thumb rests upon the eye 19 and presses it upward so that the spring 17 does not encroach upon the socket, then said socket may be freely applied to shaft 3. When it is in place, spring 17 enters groove 15 and secures the crank revolubly to said shaft.

When the shaft is to be revolved by means of the crank, handle 20 is grasped with the hand and moved inward in the direction indicated by the arrow, Fig. 1, and this moves bolt 9 accordingly, so that the tongue 10 enters and engages one of the slots 21 of the engageable element 14—10 (or so that pin 11 enters and engages one of the holes 22, as the case may be), whereupon said shaft 3 may be turned as desired. When handle 20 is released, the normal recoil or expansion of spring 12 automatically causes bolt 9 to withdraw from engagement with the engageable element upon shaft 3, and the crank then hangs loosely upon the shaft and does not revolve with the shaft when the same is power-driven.

So far as my inventive idea is concerned, it is not material which form of bolt 9 is used,—it may be either that shown in Fig. 7, or the one shown in Fig. 8. But in case it is the form shown in Figs. 2, 6 and 7, in which the engaging point is a tongue 10, adapted to enter slot shown in the engageable element of Figs. 9 and 10, then some means must be employed to prevent said bolt 9 from turning upon its axis, and for this purpose I form a tongue 23 upon the head of the bolt, and provide a corresponding slot 24 in the juxtaposed face of lever 4 for the reception of said tongue 23, and this secures the desired result of preventing said bolt from turning.

I claim:

1. The combination with a revoluble shaft having a cylindrical crank-end arranged for the reception of a crank and having an engageable element rigidly secured thereto, positioned in proximity to said end, of a crank comprising a head provided with a socket adapted to be applied to said shaft-end, a bolt in said head arranged to be longitudinally movable therein so as to be engageable with and disengageable from said engageable element upon the shaft, yieldable means normally holding said bolt in the disengaged position, a crank-lever secured to said head arranged to actuate said bolt into the engaged position, and to revolve said shaft during said engagement, and means revolubly and removably securing said crank-head to said shaft.

2. The combination with a revoluble shaft having a cylindrical end arranged for the application of a crank and provided with a rigidly-attached, engageable element positioned in proximity to said end, of a crank adapted to be applied to said end of said shaft for the purpose of revolving same, comprising a head having a socket therein for the reception of said shaft-end, a crank-lever pivotally-attached to said head, an engaging-bolt movably mounted in said head, arranged to be moved into engagement with said engageable element by the manipulation of said crank, means automatically causing the disengagement of said engaging element when said crank is released, and means revolubly and removably securing said head to said shaft.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK F. CLARKE.

Witnesses:
WM. B. GRIFFEN,
E. R. INMAN.

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