C. L. THROCKMORTON.

AUTOMATIC CENTER PUNCH.

APPLICATION FILED SEPT. 23, 1914.

1,225,191. Patented May 8, 1917.

Fig. 1.

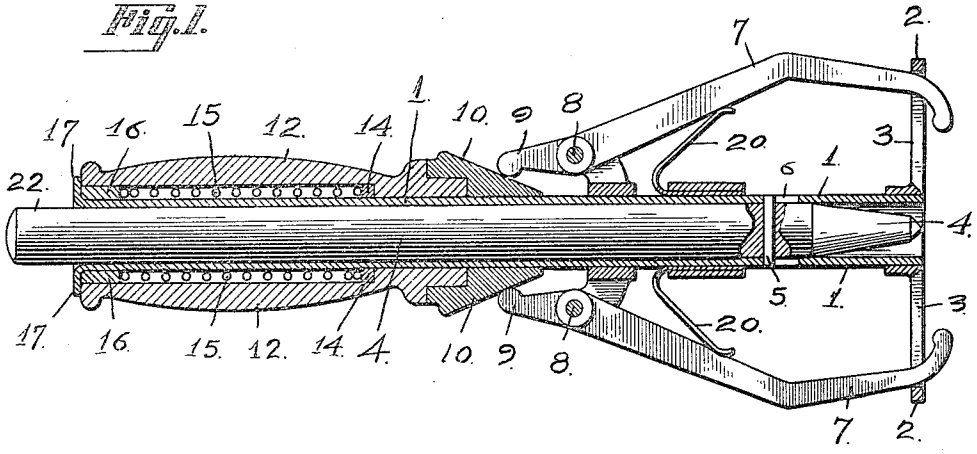


Fig. 2.

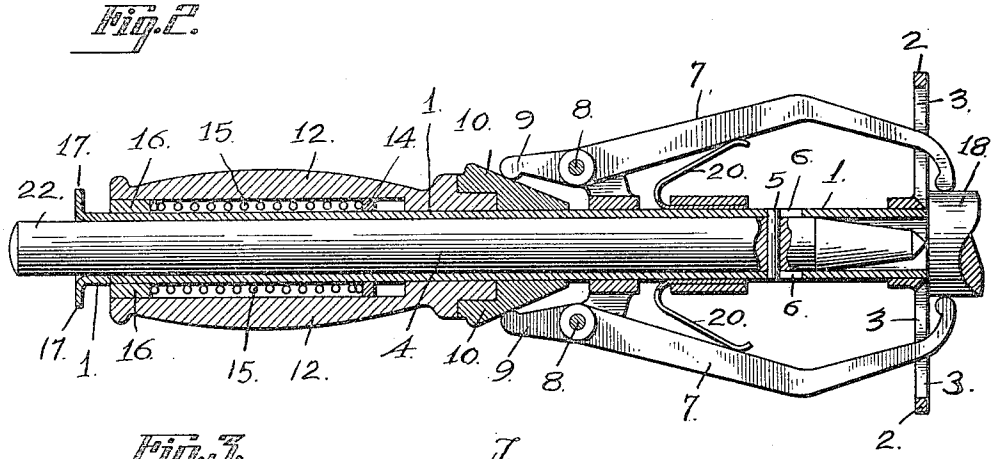
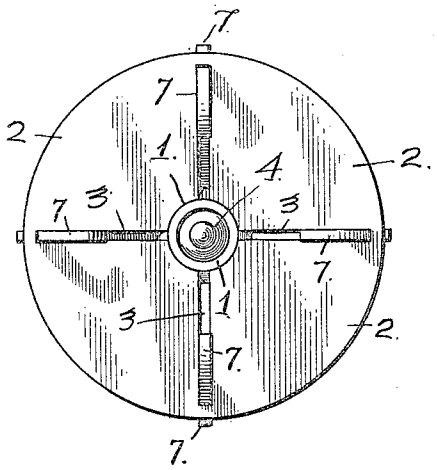


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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AUTOMATIC CENTER-PUNCH.

1,225,191. Specification of Letters Patent. Patented May 8, 1917.

Application filed September 23, 1914. Serial No. 863,988.

To all whom it may concern:

Be it known that I, CHARLES L. THROCKMORTON, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Automatic Center-Punches, of which the following is a specification.

My invention relates to an automatic center punch, wherein a frusto-conical member slidably mounted upon and concentric with a center punch operates in conjunction with a plurality of levers, pivotally mounted equidistant from the center of the said punch; and the objects of my invention are, first, to provide improved means for automatically alining a center punch with the center of a shaft; and second, to provide means for producing an indenture in the center of a cylindrical shaft.

I accomplish these features by means of the device disclosed in the drawings forming a part of the present specification, wherein like characters of reference are used to designate similar parts throughout the said specification and drawings, and in which—

Figure 1 is a longitudinal sectional view of the device disclosing the parts in a normal position.

Fig. 2 is a longitudinal sectional view disclosing the device centered on a fragment of a shaft.

Fig. 3 is an end view of the device disclosing the disk for retaining the movable levers in alinement.

Referring to the drawings, the numeral 1 is used to designate a tubular member having a disk 2 rigidly secured to one end thereof and at right angles thereto, said disk being provided with a series of radial slots 3.

Slidably mounted within the tubular member 1 is a center punch 4 having a pin 5 therein arranged to engage slots 6 of the tubular member 1 for the purpose of limiting the movement of the said center punch 4 within the tubular member 1.

A series of levers 7, which are preferably four in number, are pivotally secured to the tubular member 1, as at 8, said pivotal points 8 being equidistant from the longitudinal center of the center punch 4. The outer ends of the levers 7 extend through the slots 3 of the disk 2, while the inner ends 9 of the levers 7 are arranged to be engaged by a frusto-conical portion 10 of a handle 12, which is slidably mounted upon the tubular member 1.

A collar 14 is secured to the tubular member 1 and a spring 15 is interposed between said collar 14 and a shoulder 16 in the end of the handle 12 so that the tension of the said spring 15 will normally retain the outer end of the handle 12 against an annular flange 17 on the opposite end of the tubular member 1, to which the disk 2 is secured.

Inasmuch as the handle 12 and the frusto-conical portion 10 thereon are concentric with the tubular member 1 and the center punch 4, slidably mounted therein, it is obvious that the outer ends of the levers 7 will be moved inward simultaneously and an equal distance when the said frusto-conical portion 10 is moved under the short ends 9 of the said levers 7.

It is also obvious that the outer ends of the said levers 7 will move toward the axis of the center punch 4 simultaneously and equally so that when the ends of the said levers 7 engage an obstruction, such as the periphery of the shaft 18, the ends of all of the said levers 7 will be equidistant from the axis of the center punch 4.

It is also obvious that inasmuch as the face of the disk 2 is at right angles to the longitudinal axis of the tubular member 1 and the center punch 4, slidably mounted therein, the said tubular member 1 and the center punch 4 may be easily alined with a shaft 18 by placing the outer face of the said disk 2 against the end of the said shaft 18 by moving the handle 12, and the frusto-conical portion 10 thereon, toward the said disk 2, the end of the said shaft 18 being also at right angles to the longitudinal axis thereof, for the reason that such shafts are usually faced by placing in a lathe in which the cutting tool, in cutting off the said shaft, is moved inward on a line at right angles to the center of the said shaft.

The operation is as follows:

In order to make an indenture in the exact center of a cylindrical shaft 18 or the like, by placing the disk 2 against the end of the shaft 18 it is evident that as the said disk 2 is at direct right angles to the tubular member 1 that the center punch 4, being slidably mounted in the tubular member 1, will also

be at right angles to the disk 2, and consequently parallel with the shaft 18.

By moving the handle 12 upon the tubular member 1 against the tension of the spring 15 and in the direction of the disk 2 it is evident that the frusto-conical portion 10 on the inner end of the said handle 12 will engage the inner ends 9 of the levers 7 and move the said inner ends 9 outward, and consequently the outer ends of the levers 7 will be moved toward each other an equal amount and against the tension of the springs 20, which normally retain the outer ends of the levers 7 in an open position, until the said outer ends of the levers 7 engage the periphery of the shaft 18.

By striking a blow upon the end 22 of the center punch 4 with a hammer or similar device, it is evident that an indenture will be made in the exact center of the shaft 18.

It is evident that the greater the force used on the handle 12 in moving the same against the ends 9 of the levers 7 the greater will be the force with which the said ends of the said levers 7 will engage and hold onto the shaft 18. It is also evident that the amount of the blow received on the end 22 of the center punch 4 will be received by the shaft 18 and will in no wise be imparted to the tubular member 1, for the reason that the pins 5 in the said punch 4 will move in the slots 6 toward the end of the tubular member 1, to which the disk 2 is secured.

The tool may be easily released by relieving the pressure of the handle 12, when the spring 15 will move the said handle 12 and the frusto-conical portion 10 thereon away from the ends 9 of the levers 7, when the springs 20 will move the ends of the levers 7 outward within the radial slots 3 of the disk 2 and away from the shaft 18, thereby allowing the tool to be easily removed.

It is obvious from the foregoing that I have provided improved means for automatically centering a center punch upon the end of a cylindrical shaft, and it is also evident that the automatic center punch is adapted to engage shafts of different diameter.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. An automatic center punch comprising a tubular member; means secured to one end of the tubular member and adapted to parallel the same with a shaft to be centered; a center punch slidably mounted within the tubular member; levers pivotally mounted upon the tubular member and adapted to engage the periphery of a shaft; and means freely slidable upon the tubular member and adapted to move the levers into engagement with the periphery of a shaft.

2. An automatic center punch comprising a tubular member; a disk secured at right angles to one end of the tubular member and having radial slots therein, said disk being adapted to parallel the tubular member with a shaft to be centered; a center punch slidably mounted within the tubular member; levers pivotally mounted upon the tubular member and arranged to engage the periphery of a shaft to be centered; and means slidably mounted upon the tubular member and adapted to engage one end of each lever and to move the opposite end thereof onto the periphery of a shaft to be centered.

3. An automatic center punch comprising a tubular member; a disk secured at right angles to one end of the tubular member; a center punch slidably mounted within the tubular member; and means operatively connected to the tubular member and adapted to aline the same with the shaft, said means passing through the disk and slidably engaged thereby.

4. An automatic center punch comprising a tubular member; a center punch slidably mounted within the tubular member; means secured to one end of the tubular member and adapted to parallel the same with a shaft to be centered; levers pivotally mounted upon the tubular member and adapted to engage the periphery of a shaft to be centered; and means freely slidable upon the tubular member and adapted to engage one end of each lever and cause the opposite end thereof to engage the periphery of the shaft and thereby aline the tubular member and center punch therein with the shaft, said levers extending through said first mentioned means and being braced thereby.

5. An automatic center punch comprising a tubular member; a center punch slidably mounted within the tubular member; a disk having radial slots therein secured to one end of the tubular member whereby the same may be paralled with a shaft to be centered; levers pivotally mounted upon the tubular member and extending through the radial slots and arranged to engage the periphery of the shaft; and means slidably mounted upon the tubular member and adapted to engage one end of each lever and to cause the opposite ends of said levers to engage the periphery of the shaft to be centered and to aline the tubular member and punch therein with said shaft.

6. An automatic center punch comprising, a tubular member; a center slidably mounted within the tubular member; a disk having radial slots therein secured to one end of the tubular member and adapted to parallel the same with a shaft to be centered; levers pivotally mounted upon the tubular member and having one end thereof extending through the slots and arranged to engage the periphery of the shaft; and a handle slidably mounted upon the tubular member and

having a frusto-conical portion adapted to engage one end of each lever and cause the other ends thereof extending through the radial slots to engage the periphery of the shaft and thereby aline the tubular member and punch therein with said shaft.

In witness whereof, I hereunto set my signature in the presence of two subscribing witnesses.

CHARLES L. THROCKMORTON.

Witnesses:
PETER IVERSON,
W. N. BENEDICT.

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