(No Model.)

H. W. CHAPMAN.

MACHINE FOR TURNING CRANK PINS.

No. 499,010. Patented June 6, 1893.

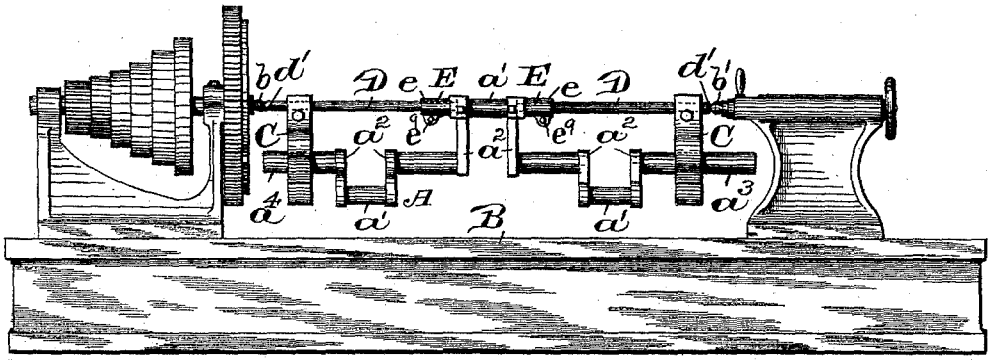

Fig. 1

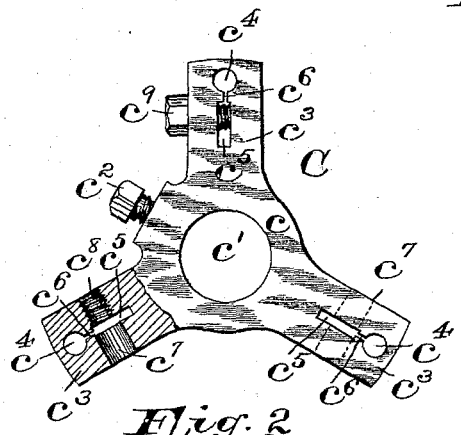

Fig. 2

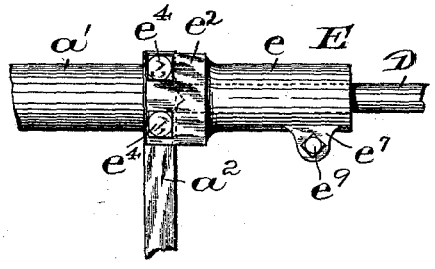

Fig. 3

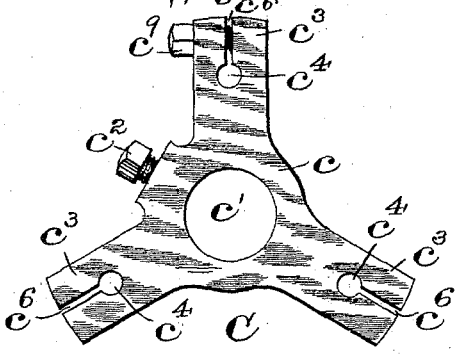

Fig. 6

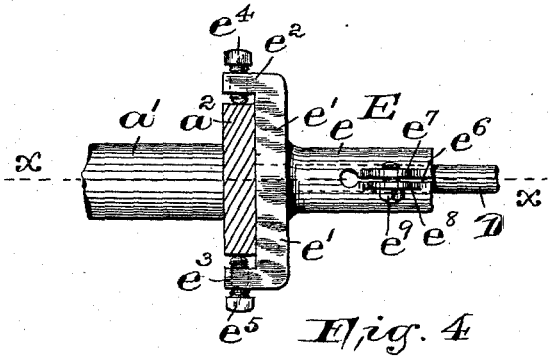

Fig. 4

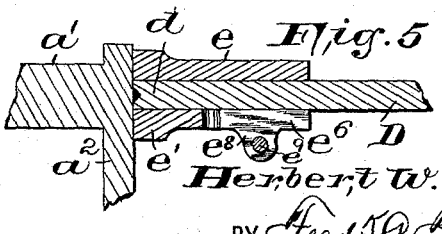

Fig. 5

WITNESSES:

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UNITED STATES PATENT OFFICE.

HERBERT W. CHAPMAN, OF NEWARK, NEW JERSEY.

MACHINE FOR TURNING CRANK-PINS.

SPECIFICATION forming part of Letters Patent No. 499,010, dated June 6, 1893.

Application filed June 29, 1892. Serial No. 438,392. (No model.)

To all whom it may concern:

Be it known that I, HERBERT W. CHAPMAN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Means for Turning Crank-Pins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention herein set forth relates to a means for turning crank pins and is also designed and constructed that the crank pins can be turned true in reference to the central axis of the crank shaft.

The invention further consists of certain novel arrangements and combination of parts, such as will be hereinafter more fully described, and is designed to provide a device for this purpose which shall be of a simple construction, and one, which during the process of turning, will prevent any undue strain on the crank-webs which cause the crank pin to be turned out of center with the crank shaft.

In the usual method of blocking up or arranging the crank shaft, with its pin or pins to be turned, between the centers of a lathe, it often happens that by the insufficient means employed for securing the crank shaft between the centers, the crank pins will be out of center with the centers of the lathe, or owing to the strain or pressure exerted by the blocking system against the webs of the crank, the crank pin will be out of alignment with the axis of the crank shaft, or perhaps, the pin will be turned slightly eccentric when the shaft is taken out of the centers of the lathe, caused by the compressed crank webs from the sides of which the strain has been removed. The old method of turning crank pins is productive of great hardship in arranging the work in the lathe, and is, moreover, uncertain in its results.

It is the main purpose of the present invention to overcome these difficulties, and to remove all strain or pressure from the crank webs when the shaft is arranged between the centers of the lathe, ready for turning.

In the accompanying sheet of drawings, is illustrated my invention, in which Figure 1 is a side elevation of a portion of a lathe, with a triple throw crank arranged thereon by means of my improvement, the middle crank pin being in its proper position ready for being turned down to its proper size. Fig. 2 is a side view of a centering device or dog used in connection with my invention, one of its supporting ends being represented in section. Fig. 3 is a side view of a portion of a crank pin and its web having arranged thereon a brace provided with a tubular boss or a sleeve, with a centering rod fitted in position therein. Fig. 4 is a bottom view of the same, the crank web being illustrated in cross section, and Fig. 5 is a longitudinal vertical section taken on line x in Fig. 4, to more clearly illustrate the arrangement of the several parts. Fig. 6 is a side view of a centering device or dog of a slightly modified form of construction.

Similar letters of reference are employed to indicate corresponding parts in each of the several views.

In said views, B, designates any suitable form of lathe provided with the usual centers b and b'.

In the drawings, accompanying the specification, I have illustrated my improvement as used in connection with a triple throw crank A, in which the "throws" or cranks are at angles of one hundred and twenty degrees, with the "centers" or "dogs" C mounted on the crank shaft and the centering rods D and end braces E in position against the central or middle throw to turn the crank pin; but the same device can be used in turning the crank pin of a shaft having but one throw, or of a shaft having two or more than three throws, as will be evident.

As shown in the drawings, and more especially in Figs. 3 and 4, I arrange against the two webs a^2 connected by the crank pin a', of either throw, the end braces E, provided with the socketed portion e and having the backplate e' provided with the backwardly extending arms e^2 and e^3 adapted to loosely embrace the sides of the web a^2 and having the

adjusting screws e^4 and e^5 which can be brought against the sides or edges of the web, as will be more fully described hereinafter. The socketed portion e is preferably provided with a slot or saw-cut e^6 and has ears or lugs e^7 and e^8, and a tightening screw e^9 in said ears. Within said socketed portion e of the end braces, I arrange the end of a centering rod D, in such a manner, that its free end d abuts against the faced side of the crank web a^2, as clearly shown in Fig. 5, and upon said rod D and the crank shaft, I mount the centering device or dog C, which is illustrated in Figs. 2 and 6. Said device C consists essentially of a hub c having a hole c' for fitting the device upon the crank shaft, and is provided with a set-screw c^2 for tightening the device in position upon the shaft. From said hub c, extend one, two, three, or more arms c^3, which are each provided with suitable openings c^4 and c^5 connected by a saw-cut c^6, as in Fig. 2, or, with only one of the openings, as c^4 and a saw-cut c^6 extending to the edge of each arm c^3, as illustrated in Fig. 6. In the sides of said arms c^3, as will be seen from Fig. 2, are the holes c^7 provided with screw-threads c^8 and a binding screw c^9 in each hole.

When it is desired to turn a crank pin, two of the centering devices C are placed on a bench, in the position illustrated in Fig. 2, and the ends a^3 and a^4 of the crank shaft are mounted in the central holes c' of said devices C.

The next operation is to slip a centering rod D through the hole c^4 of the now vertical arm c^3 of each centering device, bringing the ends d of said rods against the faces of the webs a^2 within the socketed portions e of the end braces E. The set screws c^2 are then forced down against the crank shaft, the binding screws c^9 in the arms c^3 are screwed up, whereby the rods D become firmly held in their openings or centers c^4, and the next operation is to firmly bring the two adjusting screws e^4 and e^5 in the end braces E against the sides of the crank webs, and the opposite and free ends d' of the centering rods D can then be placed in the centers b and b' of the lathe, and the crank pin turned down to the proper size. As will be seen from Fig. 1, by my arrangement, the rods D and the crank pin, with the braces E, virtually form a continuous and rigid piece in a straight line between the centers of the lathe, whereby all objectionable strains are removed from the webs and hence the crank pin will be turned perfectly true. Furthermore, the centering devices or dogs C serve as braces, the rods D, the webs of the throw, the crank shaft, and said dogs forming rigid trusses, and it will be evident that there can be no sagging at the middle of the crank shaft, as all undue strain is removed from the crank webs, and the crank pin must be turned perfectly true, for all the parts are in perfect alignment with the central axis of the crank shaft.

From the arrangement of the centering devices or dogs, illustrated in Figs. 2 and 6, when it is desired to turn off the pins of another throw or throws, it will be seen, that suitable rods D can be arranged in the holes c^4 of the other arms c^3 of the two centering devices, which are secured in position against the webs of the throw in the same manner as has just been described in the above, and the other rods D just used for turning the centrally placed crank pin are removed. Then again, the end braces E are not absolutely necessary and may be dispensed with if desired, the centering devices or dogs C readily serving the purpose of steadying the centering rods D, but in most cases and especially in very long crank shafts it is essential that the braces E are used.

Having thus described my invention, what I claim is—

1. The herein described means for turning crank pins, comprising therein suitable centering devices or dogs adapted to be mounted on the crank shaft and rigid centering rods D arranged in holes in said centering devices or dogs, having their ends abutting against the webs of the crank or throw, and the opposite ends of said rods D adapted to be arranged in the centers of a lathe, substantially as and for the purposes set forth.

2. The herein described means for turning crank pins, comprising therein suitable centering devices or dogs, adapted to be mounted on the crank shaft, end braces E on the webs of the crank or throw, and rigid centering rods D arranged in holes in said centering devices or dogs, having their ends abutting against the webs of the crank or throw, and the opposite ends of said rods D adapted to be arranged in the centers of a lathe, substantially as and for the purposes set forth.

3. The herein described means for turning crank pins, comprising therein suitable centering devices or dogs adapted to be mounted on the crank shaft, suitable set screws c^2 therein, and rigid centering rods D arranged in holes in said centering devices or dogs, and binding screws c^9, the ends of said rods D abutting against the webs of the crank or throw and having their opposite ends adapted to be arranged in the centers of a lathe, substantially as and for the purposes set forth.

4. The herein described means for turning crank pins, comprising therein suitable centering devices or dogs adapted to be mounted on the crank shaft, provided with set-screws c^2, end braces E on the webs of the crank or throw, and rigid centering rods D arranged in holes in said centering devices or dogs, and binding screws c^9, the ends of said rods D abutting against the webs of the crank or throw and having their opposite ends adapted to be arranged in the centers of a lathe, substantially as and for the purposes set forth.

5. The herein described means for turning crank pins, comprising therein suitable centering devices or dogs C adapted to be mount-

ed on the crank shaft, consisting of a hub c having a hole c', a set screw c^2, one or more arms c^3, openings c^4 and c^5 and a saw-cut c^6 connecting said openings, and a binding screw c^9, and centering rods D adjustably arranged in said openings c^4, having their ends abutting against the webs of the crank or throw, and the opposite ends of said rods adapted to be arranged in the centers of a lathe, substantially as and for the purposes set forth.

6. The herein described means for turning crank pins, comprising therein suitable centering devices or dogs C adapted to be mounted on the crank shaft, consisting of a hub c having a hole c', a set screw c^2, one or more arms c^3, openings c^4 and c^5 and a saw-cut c^6 connecting said openings, and a binding screw c^8, and centering rods D adjustably arranged in said openings c^4, having their ends abutting against the webs of the crank or throw, and the opposite ends of said rods adapted to be arranged in the centers of a lathe, and end braces E on said rods D, consisting of a sleeve e, a back-plate e' having arms e^2 and e^3, adjusting screws e^4 and e^5 in said arms, a slot or saw-cut e^6 in said sleeve e, ears or lugs e^7 and e^8, and a binding screw e^9, all arranged, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 25th day of June, 1892.

HERBERT W. CHAPMAN.

Witnesses:
FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.