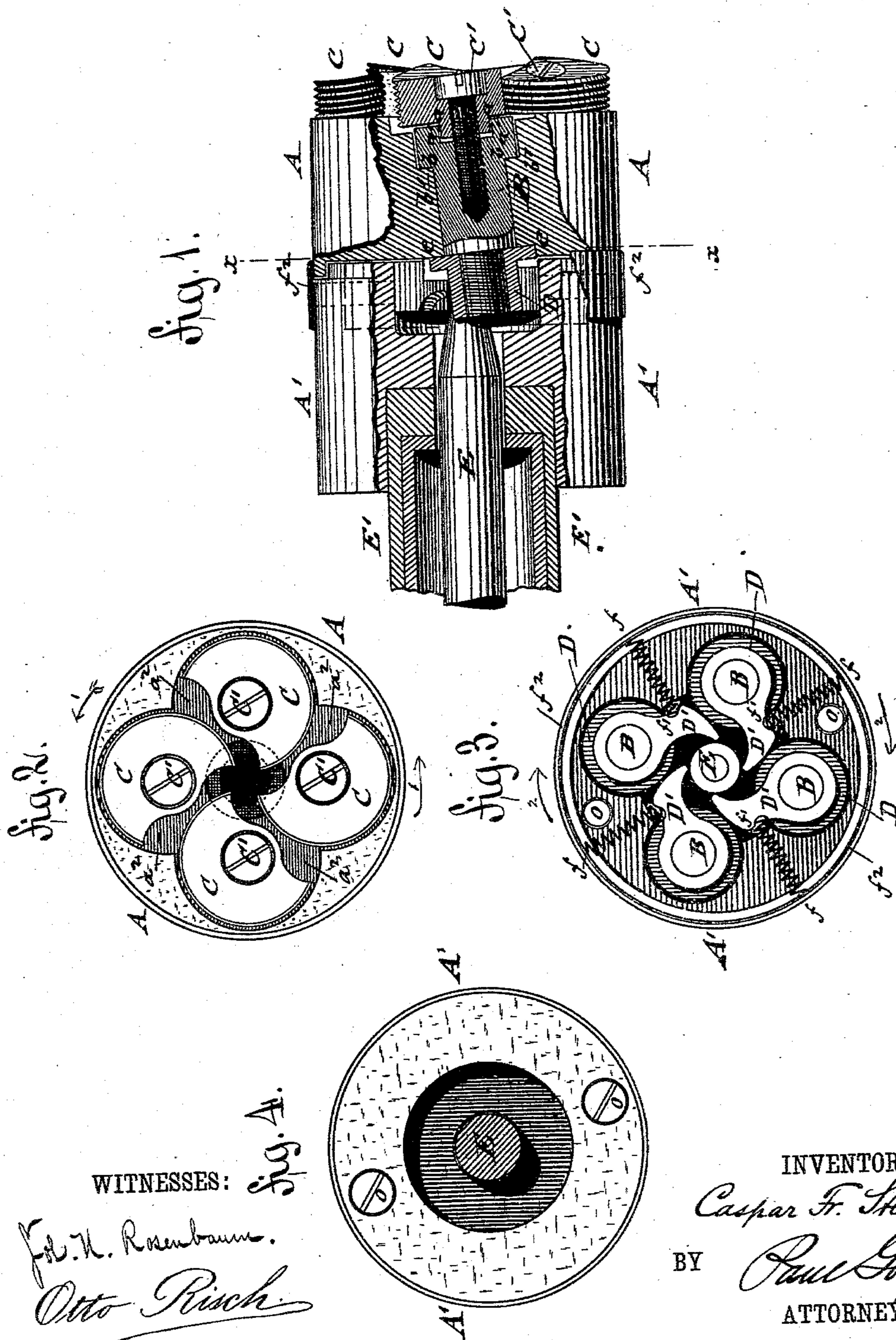


(No Model.)

C. F. STEINMETZ.
SCREW CUTTING CHUCK.

No. 283,679.

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WITNESSES:

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SCREW-CUTTING CHUCK.

SPECIFICATION forming part of Letters Patent No. 283,679, dated August 21, 1883.

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To all whom it may concern:

Be it known that I, CASPAR F. STEINMETZ, of Port Chester, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Screw-Cutting Chucks, of which the following is a specification.

This invention has reference to an improved chuck for cutting screw-threads of different lengths on bolts of different sizes, the chuck having the advantage of being more durable than the screw-cutting dies heretofore in use, so as to dispense with the frequent changing and retempering of the dies.

The invention consists of a thread-cutting chuck provided with four segmental thread-cutting dies, each of which is rigidly secured to a spindle the axis of which is placed at a suitable oblique angle of inclination to the central axis of the chuck, according to the number of threads per inch to be cut by the chuck. Each spindle is secured to a supporting-socket, that turns in the rear portion of the chuck, and is provided at its rear end with a rounded-off and spring-pressed crank-arm, that is engaged by the conical end of a longitudinally-movable spindle, by which the dies are set to the proper thickness of the bolt to be threaded.

In the accompanying drawings, Figure 1 represents a side elevation, partly in section, of my improved screw-cutting chuck. Fig. 2 is a front elevation. Fig. 3 is a vertical transverse section on line *xx*, Fig. 1, and Fig. 4 is a rear elevation of the same.

Similar letters of reference indicate corresponding parts.

My improved thread-cutting chuck is made of two cylindrical main parts, *A A'*, that are connected by longitudinal screw-bolts *ooo*. The front part, *A*, is arranged with inclined cylindrical socket-holes equidistantly from the central axis, for supporting four spindles, *B B*, to which the thread-cutting dies *C C*, of segmental shape, are secured by screws *C'*. These screws *C'* are provided with left-hand threads when right-hand screw-threads are to be cut by the dies, and with right-hand threads when left-hand screw-threads are to be cut, so as to prevent the working loose of the cutting-dies *C C*. The heads of the fastening-screws *C'* are

countersunk into the dies *C*, the latter having at the bottom a collar, *a*, that is set into a socket-recess, *a'*, at the front ends of the spindles *B B*, so that a rigid connection of the spindle with the dies is secured. The spindles *B B* are also provided with shoulders or offsets *b*, that rest in corresponding recesses, *b'*, of the socket-holes of the main part *A*. The spindles *B B* and their socket-holes are set at such an angle of inclination to the central axis of the chuck (said angle of inclination being in proportion to the number of threads per inch, and made greater when a less number of threads is required, and smaller when a greater number of threads per inch is to be cut) that the proper pitch of the threads is obtained by the cutting-dies. The segmental dies *C* are made of tempered steel and screw-threaded at their circumferences. They can be used for a considerable length of time before they are entirely worn out, they being sharpened over and over again at their edges as they become dull, until the entire body of the same is used up. They are for this purpose detached from their spindles by loosening the fastening-screws *C' C'* and sharpened at their cutting-edges. In replacing the dies *C C* they are so secured to their spindles that their sharpened edges are equidistant from the axis and project somewhat beyond the bolt-guide hole at the center of the chuck, as shown in Fig. 2. The dies *C C* are then tightly clamped again by their fastening-screws *C' C'*. The rear ends of the spindles *B B* are also provided either with left-hand or right-hand threads, according as right-hand or left-hand threads are to be cut on the bolts, and screwed into sockets *D*, which turn by shoulders *e e* in inclined guide-recesses at the rear end of the front part, *A*, while the sockets themselves are fitted into socket-holes of the rear part, *A'*, of the chuck, as shown clearly in Fig. 1. The sockets *D* are retained by their shoulders *e e* in proper position in the parts *A A'*. They are further provided at their rear ends with fixed rounded-off crank-arms *D'*, which are acted upon at one side by springs *f f*, that are interposed between recesses *f'* of the crank-arms *D'* and an exterior retaining shell or band, *f''*. The crank-arms *D'* are kept by the springs *f f* in contact with the conically-tapering end

of a spindle, E. The forward movement of the spindle projects the tapered end thereof between the crank-arms D' and swings them outward, thereby turning the several spindles 5 of the cutting-dies, so as to bring and hold the cutting-edges of said dies in contact with the bolt to be threaded, as shown in Fig. 2. When the spindle is retracted, the springs f push in the crank-arms and turn the spindles of the 10 cutting-dies in the direction which causes the dies to open and release the bolt. The direction of rotation indicated by the arrows 1 in Fig. 2 corresponds with that indicated by the arrows 2, Fig. 3. The forward or back- 15 ward motion of the spindle E in the revolving shaft of the screw-cutting chuck is accomplished by a machine for cutting screw-threads on bolts, which forms the subject-matter of a separate application filed at the same time 20 herewith. The rear part, A', is secured to a hollow shaft, E', within which the spindle E operates, and by which shaft E' rotary motion is imparted to the chuck for cutting the threads. According to the extent of forward or back- 25 ward motion of the spindle E, bolts of greater or less thickness can be introduced between the cutting-edges of the dies, which are then threaded by the turning of the chuck, and thereby gradually drawn into the central open- 30 ing in the front part, A. As the parts A A' are rigidly connected to each other by the longitudinal screw-bolts o o, all the actuating parts of the chuck are retained by the parts A A', which are also properly lubricated, so as to produce the smooth working of the spin- 35 dles in their bearings. The cutting-dies are set into corresponding face-recesses a² of the front part, A, as shown clearly in Fig. 2. Separate cutting-chucks have to be constructed for 40 the varying pitch of the threads, as the angle of inclination of the die-spindles is determined by the pitch of the threads. Each size of chuck serves for cutting bolts of certain sizes, larger sizes of bolts requiring also larger chucks and 45 dies.

The advantages of my improved screw-cutting chuck are, first, that the solid segmental dies can be re-sharpened a great number of

times until the entire body of the same is worn out, whereby the chuck is serviceable for a much 50 greater length of time than the screw-cutting dies heretofore in use; secondly, that bolts of different sizes can be threaded to different lengths of thread by the same chuck; and 55 thirdly, that a considerable saving in time and labor is obtained, as the retempering and re-setting of the dies heretofore in use is entirely dispensed with.

Having thus described my invention, I claim as new and desire to secure by Letters Patent— 60

1. A screw-cutting chuck composed of a sectional main part, A A', die-spindles B B, having segmental cutting-dies C C, the spindles being inclined to the axis of the chuck, socket- 65 pieces D D for the spindles, said socket-pieces having spring-pressed crank-arms D' D', and a central longitudinally-sliding spindle, E, having a tapering end, which engages the crank-arms and sets the cutting-dies to greater or 70 less distance from the axis of the chuck, substantially as set forth.

2. The combination of the connected main parts A A', having longitudinal center opening and inclined socket-holes, die-spindles B B, having fixed segmental cutting-dies C C, 75 said spindles being set at an angle of inclination to the axis of the chuck, a longitudinally-sliding spindle, E, having a tapering end, and means whereby the spindles and cutting-dies are set to the proper thickness of bolts by the 80 central spindle, substantially as specified.

3. In a screw-cutting chuck, the combination of connected main parts A A', inclined die-spindles B B, cutting-dies C C, fasten- 85 ing-screws C' C', socket-pieces D D, having curved crank-arms D' D', springs f f, retaining-band f², and longitudinally-sliding center spindle, E, having tapering front end engaging the cranks, substantially as described.

In testimony that I claim the foregoing as 90 my invention I have signed my name in presence of two subscribing witnesses.

CASPAR FR. STEINMETZ.

Witnesses:

CARL KARP,
SIDNEY MANN.