

(No Model.)

2 Sheets—Sheet 1.

W. L. GROUT & E. L. BOWERS.  
GRIPPING DEVICE FOR LATHES.

No. 445,697.

Patented Feb. 3, 1891.

Fig-1.

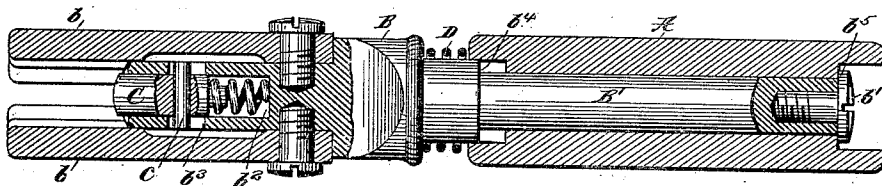


Fig-2.

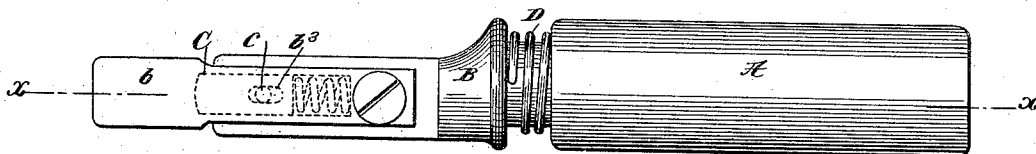


Fig-3.

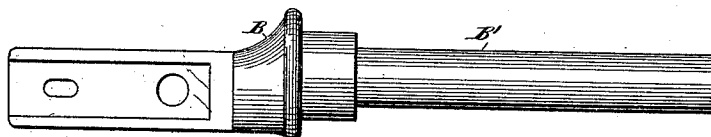
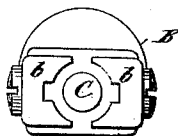


Fig. 4.



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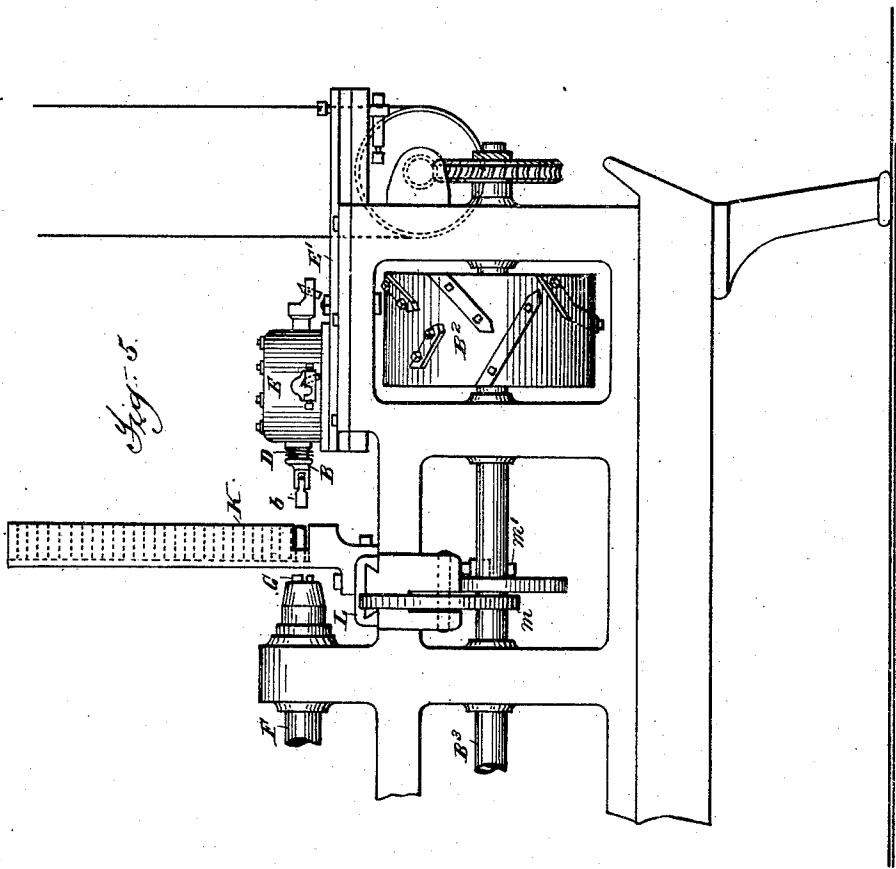
(No Model.)

2 Sheets—Sheet 2.

W. L. GROUT & E. L. BOWERS.  
GRIPPING DEVICE FOR LATHES.

No. 445,697.

Patented Feb. 3, 1891.



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# UNITED STATES PATENT OFFICE.

WILLIAM L. GROUT AND EDWARD L. BOWERS, OF ORANGE, MASSACHUSETTS.

## GRIPPING DEVICE FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 445,697, dated February 3, 1891.

Application filed May 24, 1890. Serial No. 353,019. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM L. GROUT and EDWARD L. BOWERS, citizens of the United States, and residents of Orange, county of Franklin, and State of Massachusetts, have invented a new and useful Gripping Device, of which the following, taken in connection with the drawings herewith accompanying, is the specification.

Our invention relates to a "gripping device," so called, adapted for use in connection with a machine of the same or similar character shown and described in our application for a patent filed of a corresponding date, marked "Case A," in which a rotating spindle carrying a chuck and a turret on a sliding carriage moves or operates on the same plane and in a central line in the usual manner, and our improved gripping device is adapted to be held and operated by the turret and its operating mechanism.

In accordance with our invention metal blanks, castings, forgings, or other pieces adapted to be turned, drilled, or otherwise operated upon are placed in a suitable receiving-magazine mounted upon a cross-slide operating at right angles to the rotating spindle carrying the chuck and the turret supporting our improved gripping device and between the same, and said magazine is adapted at the proper time to be moved in position central with the line of the chuck and gripping device by suitable operating mechanism. The turret is then moved forward by a movement of its supporting-carriage, causing our improved gripping device or part thereof to enter an opening in said magazine to engage with and retain in its grasp one of the objects located therein. The magazine is then moved laterally from its central position and the gripping device is then moved forward to place the object retained thereby in the chuck when the latter is either rotating or stationary.

The object of our present invention is to provide a gripping device for the purpose as above set forth, for use in combination with a chuck having its receiving-opening arranged at one side of the center of rotation of its rotating spindle, more especially adapted for rotating objects adapted to be cut away

to a greater degree on one side of its center than the other or otherwise be operated upon off its center, which object we accomplish by providing a supporting shell or frame for attachment with the turret and a device provided with gripping-jaws supported by said shell or frame at one side of the center of rotation of the chuck-rotating spindle an equal or about an equal distance with the chuck and in a manner to be revolved in order to rotate with the chuck when the object retained thereby is being placed in the chuck and while the jaws of the latter are closing upon said object.

Referring to the drawings, Figure 1 represents a sectional view of our improved gripping device through line *xx* of Fig. 2, and Fig. 2 a side elevation; Fig. 3, a detail view of the jaw and supporting frame or spindle, and Fig. 4 a front end elevation of the device entire. Fig. 5 represents a section of a machine, showing our improved gripping device in position in a supporting-turret and its relative position with the magazine and chuck when in position for operation.

To explain in detail, A represents a supporting-shell adapted to be attached to or supported by the carrying and operating turret, (represented at E in Fig. 5,) by which the spindle or frame B, supporting the jaws *b b*, and other parts forming the gripping device, are supported by means of a shank or stem B', projecting from said spindle or frame B into a corresponding opening, forming a bearing for the same in said shell or frame A, being secured therein in the instance shown by means of a screw *b'*, in order to allow said shank or stem to revolve therein, although it is obvious a nut or similar means might be employed in lieu thereof, and said frame or spindle B is elastically supported longitudinally in its relation to its supporting-shell A and the turret E by means of a coiled spring D, located between said shell A and a flange or shoulder on the frame or spindle B, as shown, the latter being limited in its movement to the shell A by means of a shoulder or other projection *b<sup>1</sup>* at one end of the stem B' and a shoulder formed by the head of the screw *b'* at the opposite end thereof, engaging with corresponding shoulders or projections in the

shell A, and said frame or shank B and the parts supported thereby are located at one side of the center of its supporting shank or stem B', as shown.

5 The gripping-jaws *b b* are seated in slight depressions in the frame or spindle B to prevent their lateral displacement and are secured at one end thereto, their opposite ends projecting beyond the latter a sufficient distance to properly engage or grasp the desired 10 object, (located in the magazine represented at K,) and said jaws are cut away slightly at a point between their ends in order to give the jaws a certain degree of elasticity to allow 15 their outer engaging ends to yield or spread apart upon engagement with an object, and hold the same with an elastic pressure, and also to allow for any slight irregularities, &c., in the surface of the object to be engaged.

20 C represents a pushing device consisting of a spring-actuated rod located in a central longitudinal opening *b<sup>2</sup>* in the frame or spindle B, slightly projecting at one end, said frame or spindle in a position central between the gripping-jaws *b*, and is retained in 25 position by means of a pin *c*, extending through its diameter and projecting at each end into a longitudinal slot *b<sup>3</sup>* in the frame or spindle, as shown in Figs. 1 and 2, of sufficient length 30 to allow the rod C to have a slight longitudinal movement, for the purpose, as will hereinafter be set forth.

The operation and function of the several parts forming our improved device, briefly 35 stated, are as follows: The gripping device as a whole is supported by the turret E, as described, which latter is supported on and carried by a sliding carriage E', operated through the medium of cams located on a 40 pulley B<sup>2</sup>, driven by the driving-shaft B<sup>3</sup>, as more fully set forth in our said application, (Case A,) and said gripping device is adapted, through the medium of the operating-cams, to be moved forward to grasp an object 45 located in the magazine K, and then withdrawn to allow said magazine (which is mounted upon a cross-slide L, operated by levers *m* and *m'*, as set forth in said Case A) to be moved laterally from position in front of said 50 gripping device, after which the latter is again moved forward to place the object retained thereby in a chuck, (represented at G,) and as the jaws *b* come in contact with said chuck they are allowed to yield slightly, owing to elastic pressure thereof accomplished 55 by means of the spring D; and as the object is placed in the chuck the gripping device is caused to rotate with the chuck, the latter being operated by the rotating spindle F. 60 Thereafter the pushing-rod C, acted upon by its operating-spring, presses the object firmly into the chuck until the jaws of the latter have closed securely upon said object, after which the turret is caused to recede, leaving 65 the object in the chuck to be rotated and receive a concentric motion, for the purpose as

hereinbefore set forth. It is obvious, however, that the frame or spindle B, if desired, may be supported in the center of rotation of the chuck-rotating spindle for use in combination with a chuck having its receiving-opening located in the center of rotation of its operating-spindle without departing from the spirit of our invention.

Having thus set forth our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination with a turret and its operating mechanism, a gripping device consisting of a supporting-shell for attachment 80 with said turret, and a frame or shank provided with gripping-jaws secured thereto and with a stem extending within said supporting-shell, by which said frame or shank is supported, and a spring located between the adjacent ends of said supporting-shell and the 85 frame or shank in a manner whereby the latter is elastically supported in its relation to the former, substantially as described, and for the purpose set forth. 90

2. In combination with a turret and its operating mechanism, a gripping device consisting of a supporting-shell adapted for attachment with said turret, and a revolving 95 spindle or frame provided with gripping-jaws supported by said supporting-shell at one side of its center, in a manner substantially as described, and for the purpose set forth.

3. In combination with a turret and its operating mechanism, a gripping device consisting of a supporting-shell for attachment 100 with said turret, a frame or shank provided with gripping-jaws secured thereto, a spring-actuated rod or pushing device projecting 105 its front end thereof, and a stem at its rear end projecting within said supporting-shell in a manner to support said frame or shank and the several parts supported thereby and allow the same to rotate, substantially as described, and for the purpose set forth. 110

4. In combination with a turret and its operating mechanism, a gripping device consisting of a supporting-shell for attachment 115 with the turret, a frame provided with gripping-jaws secured thereto, a spring-actuated rod or pushing device supported therein and projecting its front end thereof, provided with a projection thereon which extends and operates within a slot in said frame to limit 120 the movement of said rod or pushing device, and a stem located on the rear end of said frame extending within said supporting-shell to support the frame, substantially as described, and for the purpose set forth. 125

5. The combination, in a turret-lathe, with a chucking device having its opening at one side of its center, and operating mechanism, of a gripping device supported by the turret, 130 consisting of a supporting-shell and a frame provided with jaws secured thereto, supported by said shell at one side of its center by means

of a stem located on said frame and extending within said supporting-shell, substantially as described, and for the purpose set forth.

5 6. The combination, in a turret-lathe, with a rotating chucking device having its opening at one side of its center, and operating mechanism, of a gripping device supported by the turret, consisting of a supporting-shell and a frame provided with jaws secured thereto, supported by said shell at one side of its center by means of a stem located on said frame and extending within said supporting-shell in a manner to allow the frame and jaws  
10 secured thereto to rotate, substantially as described, and for the purpose set forth.

7. The combination, in a turret-lathe, with

a chucking device having its opening at one side of its center, and operating mechanism, 20 of a gripping device supported by the turret, consisting of a supporting-shell and a frame provided with jaws secured thereto, supported by said shell at one side of its center by means of a stem located on said frame and 25 extending within said supporting-shell, and a spring located between said shell and frame to hold the latter in an elastically-extended position from the former, substantially as described, and for the purpose set forth.

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EDWARD L. BOWERS.

Witnesses:

CHAS. F. DANE,  
JOSEPH M. CRANE.