

(No Model.)

C. A. STARK.
MULTIPLE BORING MACHINE.

No. 411,359.

Patented Sept. 17, 1889.

Fig-1-

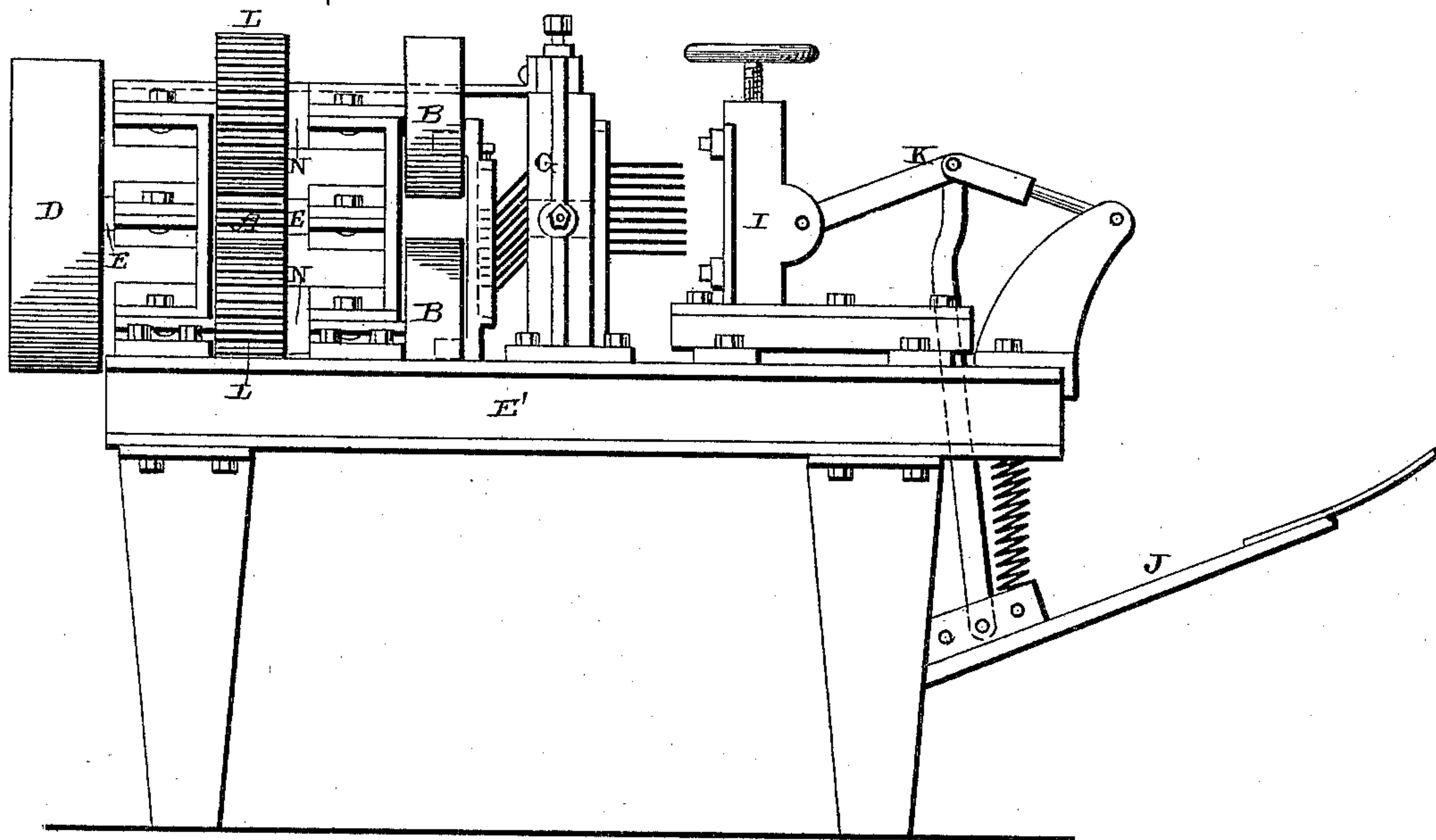


Fig-2-

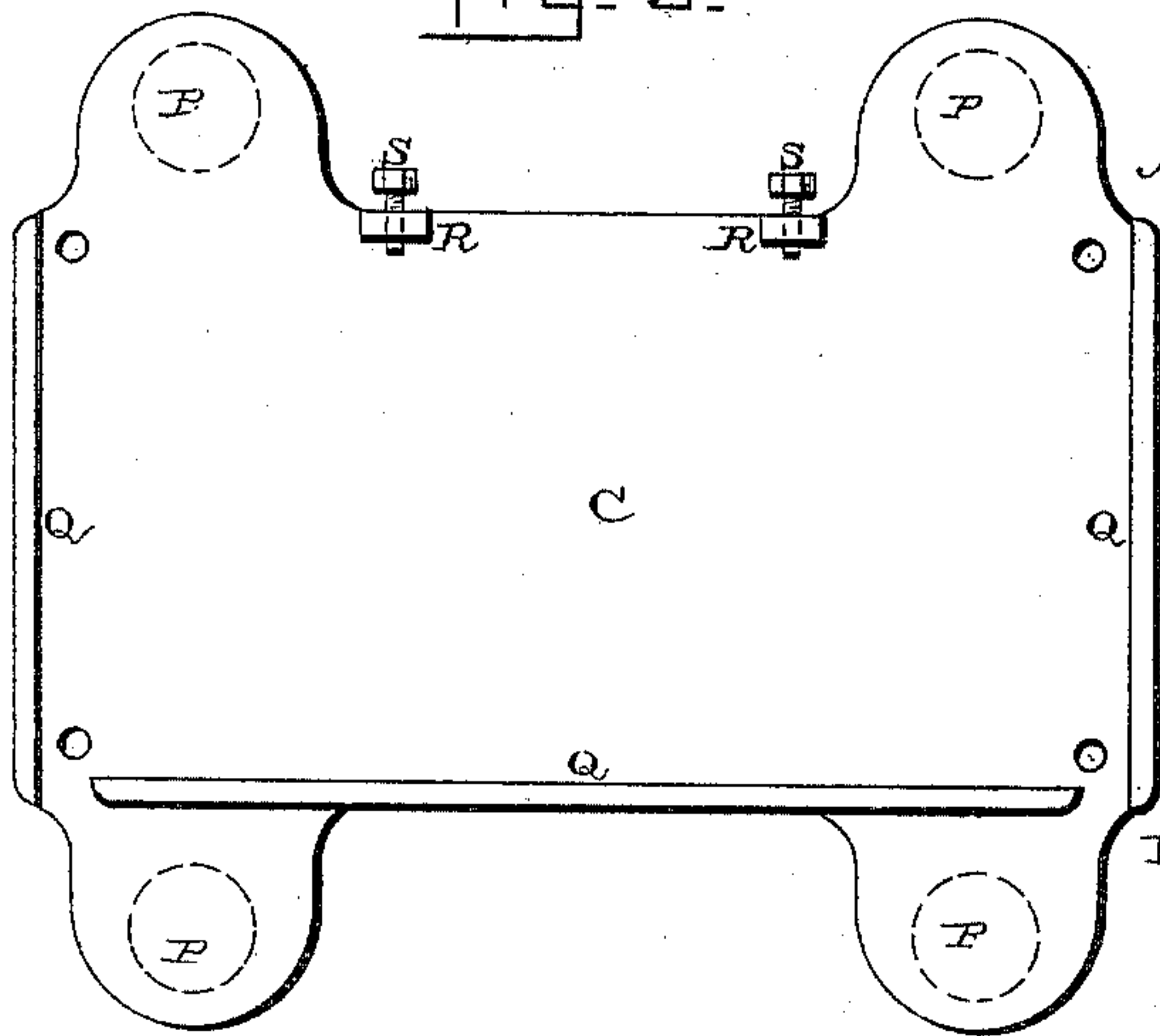
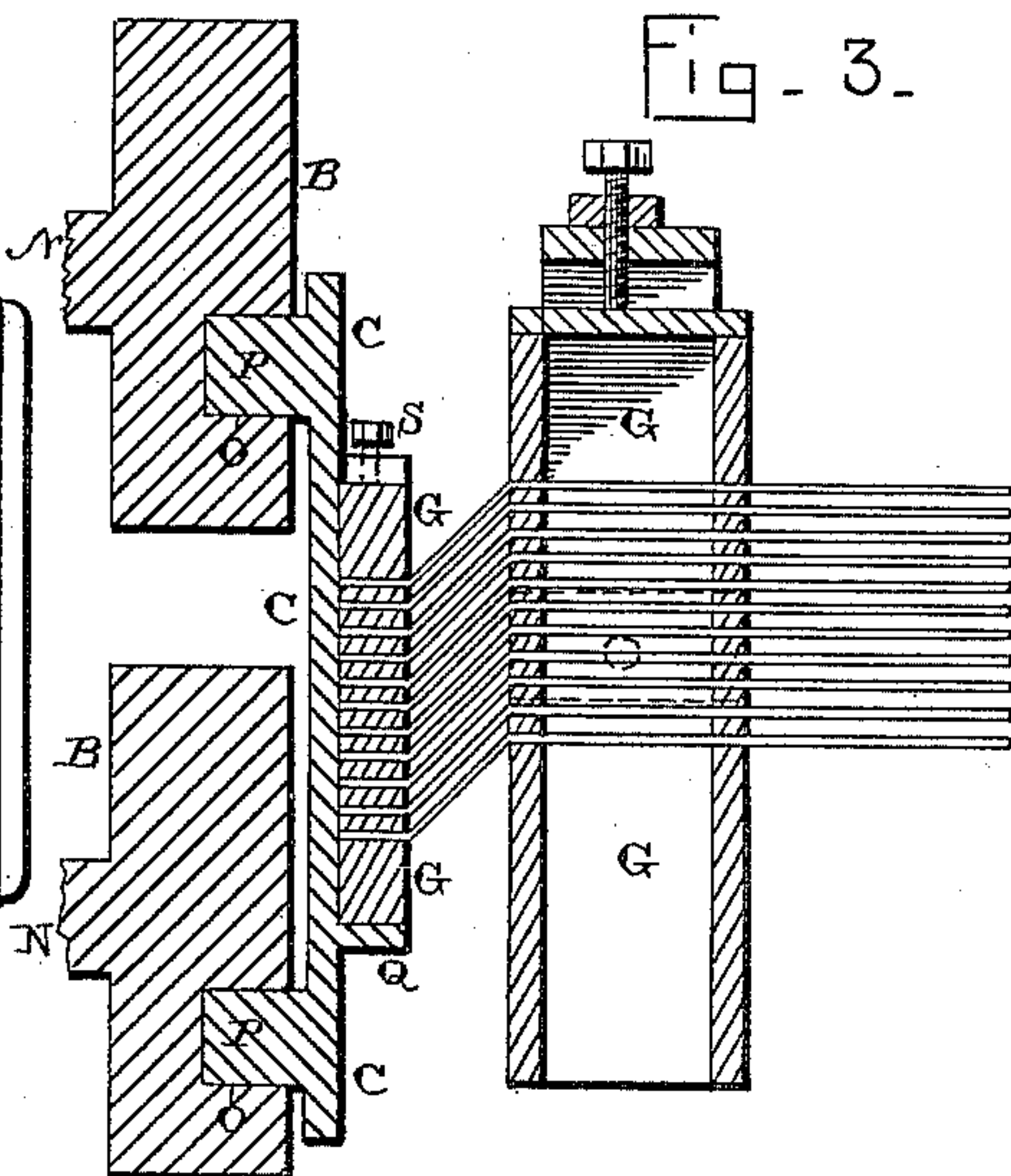


Fig-3-



Witnesses:

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Inventor:

Chas. A. Stark,
per
J. A. Lehmann, atty.

UNITED STATES PATENT OFFICE.

CHARLES A. STARK, OF CORRY, PENNSYLVANIA.

MULTIPLE BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 411,359, dated September 17, 1889.

Application filed May 6, 1889. Serial No. 309,818. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. STARK, of Corry, in the county of Erie and State of Pennsylvania, have invented certain new and useful
5 Improvements in Multiple Boring-Machines; 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 pertains to make and use
10 it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in multiple boring-machines; and it consists in
15 the combination of four operating - shafts, four recessed disks secured to the shafts, a bit-driver provided with four journals which fit in the recesses in the disks, the crank-carrier which is secured to the bit-driver, the
20 journal-board, and the bits, as will be more fully described hereinafter.

The object of my invention is to do away with the two cranks which have heretofore been used for operating the bit-driver and to
25 substitute therefor a metallic bit-driver which is provided with four journals and to which the crank-carrier is rigidly secured, whereby an even reciprocating motion is given to the crank-carrier, thus doing away with the jerking
30 movement which is imparted to it by the cranks which have heretofore been used.

Figure 1 is a side elevation of a boring-machine which embodies my invention. Fig. 2 is a detached view of the bit-driver and the
35 disks by which it is operated. Fig. 3 is a vertical section of the bit-driver, the crank-carrier, and the journals through which the boring-rods pass.

E' represents a suitable supporting-frame, and D the driving-pulley through which the other parts of the machine are operated. This pulley D is placed upon the outer end of the shaft E, which is journaled in suitable bearings and to which the operating-wheel A is
40 secured. Meshing with this wheel A are four other wheels L of the same size, which are secured to the shafts N, which are journaled in suitable bearings prepared to receive them, and secured to the inner ends of these shafts
50 N are the disks B, which have the eccentric recesses O formed in them. When motion is

imparted to the wheel A through the pulley D and shaft E, the shafts N and disks B are caused to revolve by the wheels L.

Between the disks B and journal-board 55 holder G is placed the bit-driver C, which is formed in a single casting or plate, as shown, and which is provided with a journal P, at each of its corners, and these journals P fit in the eccentric recesses O formed in the disks 60 B. This bit-driver is provided with flanges Q around three of its edges, and with the lugs R at its top and through which the set-screws S are passed. The crank-carrier is placed between the flanges Q and the lugs R, 65 and is held rigidly in position by means of the set-screws S. The four journals impart to the bit-driver and the crank-holder an even steady movement which cannot be imparted by means of the two cranks which have heretofore been 70 used for this purpose. Where cranks are used, a jerk is given to the crank-holder at each reciprocation, and this jerk soon causes the crank-carrier and journal-boards to split, when the machine becomes inoperative at 75 once. The great trouble experienced from this source will be better understood when it is stated that sometimes the crank-carrier and journal-boards do not last more than a couple of hours. By using four journals, as 80 here shown, all of this jerking movement is done away with, and the crank-carrier and journal-board being relieved of strain will last almost indefinitely. The journal-boards are held in the holder G, as shown, and can 85 be adjusted at the will of the operator. The brush-block is placed in the holder I, which is caused to reciprocate upon the frame by means of the toggle-joint K, which is connected to the spring-actuated treadle J in the 90 usual manner. The toggle-joint is here used, so that when the holder I is forced forward it is held rigidly in position, so that there can be no back-action or strain while the bits are boring the block. The boring-rods extend 95 through the journal-boards at any desired angle, and are especially adapted for boring the hole in brush-blocks.

Having thus described my invention, I claim—

1. The combination of the driving-shaft with a driving-wheel, the four shafts provided

with wheels which mesh with the driving-wheel, the eccentrically - recessed disks secured to the ends of the shafts, and the bit-driver provided with journals which fit in the
5 recesses in the disks, substantially as shown.

2. A bit-driver provided with a journal at each of its corners and with the flanges Q, lugs, and set-screws S, in combination with the bits provided with cranks at their inner
10 ends, substantially as described.

3. The combination of the shafts N, provided with operating-wheels L, and the driving-shaft provided with a driving-wheel for

operating the wheels L, the disks B, provided with eccentric recesses O, and the bit-driver 15 provided with a journal at each of its corners, the crank-carrier, the boring-rods, the journal-plates, and a mechanism for presenting the brush-block to the bits, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses. 20

CHAS. A. STARK.

Witnesses:

C. A. MAHLE,

C. R. POWELL.