

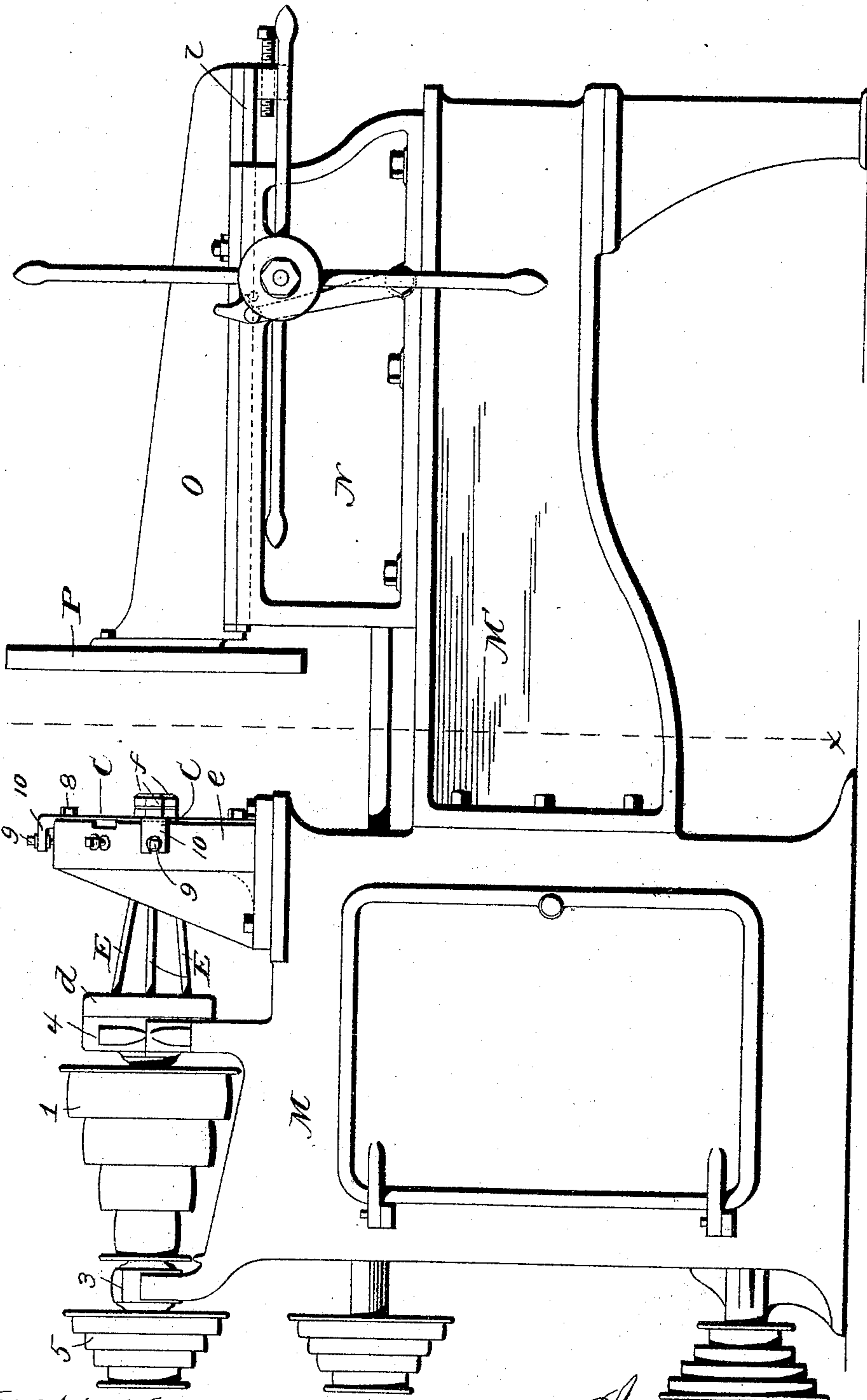
(No Model.)

2 Sheets—Sheet 1.

D. E. & L. E. WHITON.
MULTIPLE DRILLING MACHINE.

No. 500,646.

Patented July 4, 1893.



Witnesses
J. Williamson
F. L. Middleton

Inventors
D. E. Whiton
L. E. Whiton
by Ellis Spear Atty.

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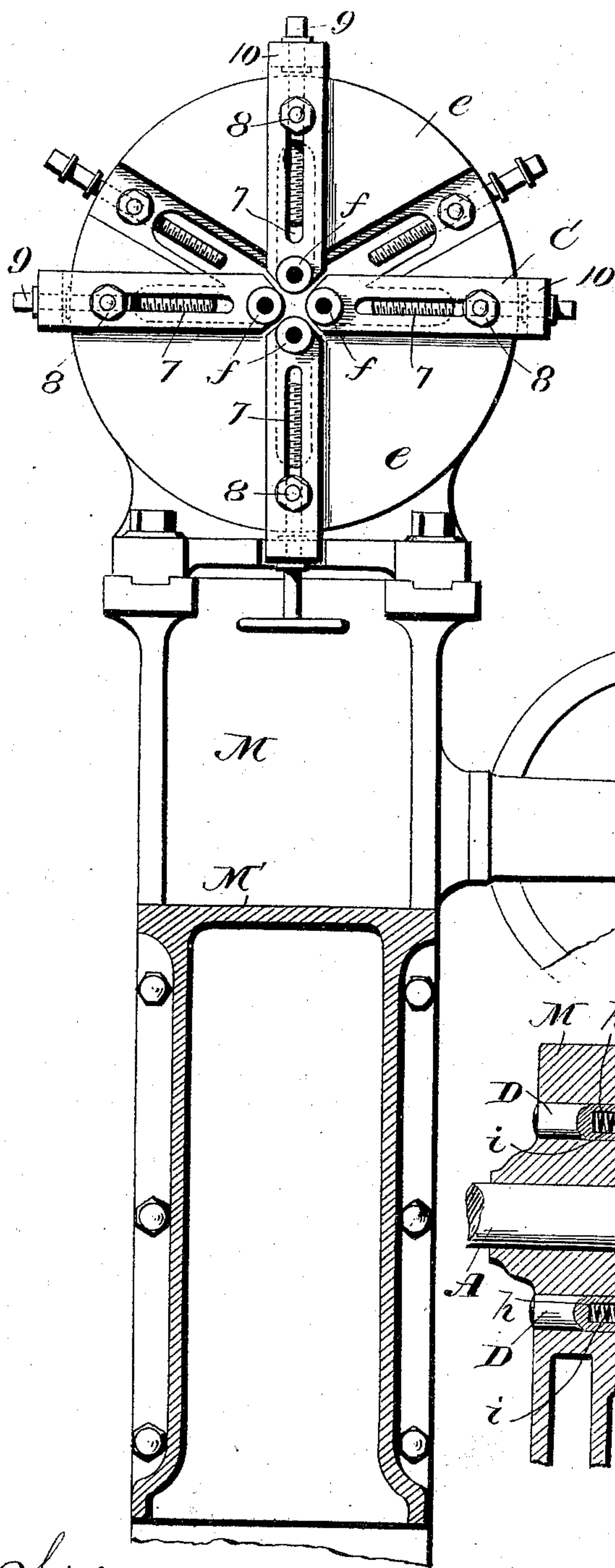


Fig. 2.

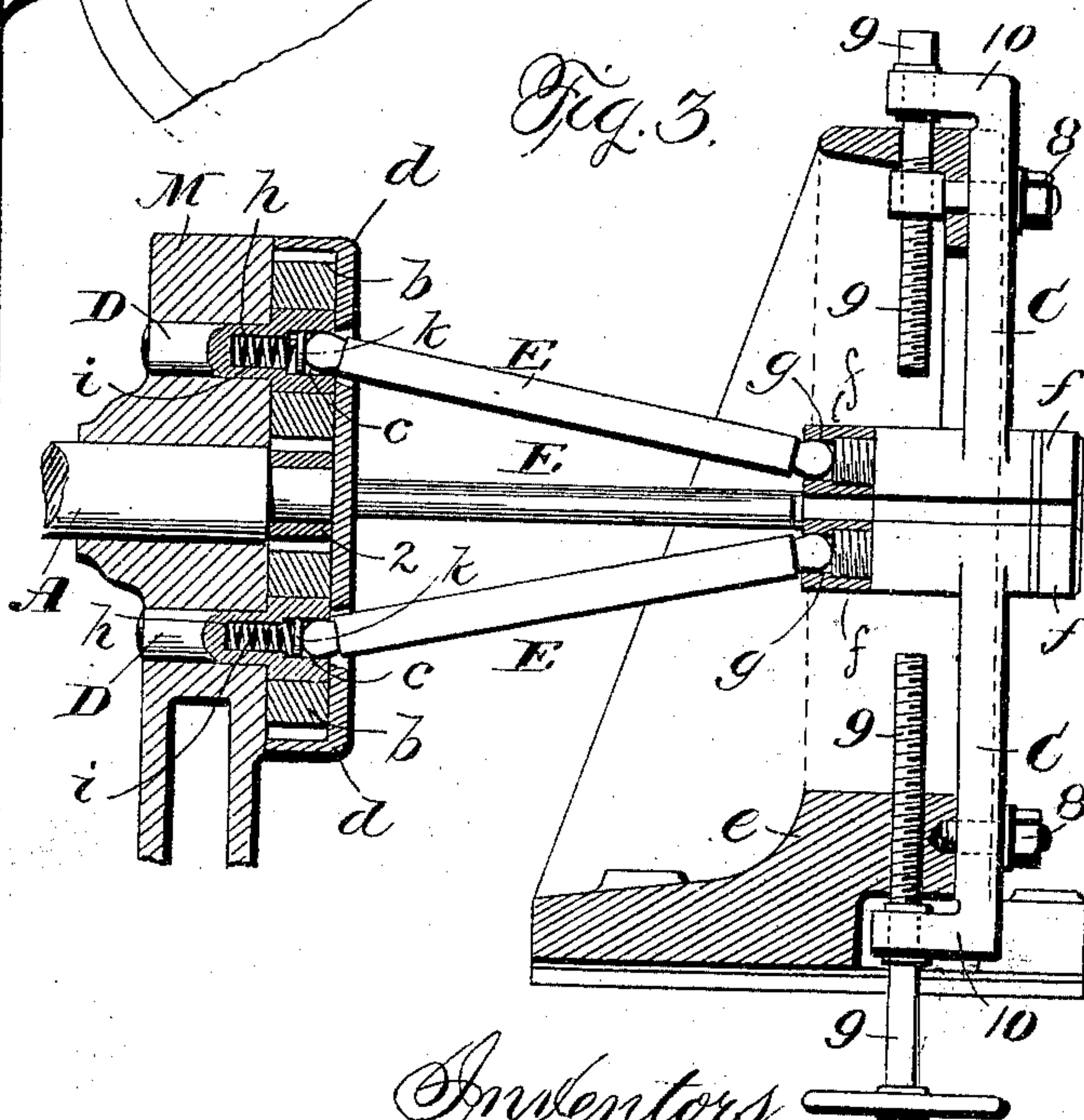


Fig. 3.

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UNITED STATES PATENT OFFICE.

DAVID E. WHITON AND LUCIUS E. WHITON, OF NEW LONDON, CONNECTICUT, ASSIGNORS TO THE D. E. WHITON MACHINE COMPANY, OF SAME PLACE.

MULTIPLE DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 500,646, dated July 4, 1893.

Application filed April 22, 1892. Serial No. 430,250. (No model.)

To all whom it may concern:

Be it known that we, DAVID E. WHITON and LUCIUS E. WHITON, citizens of the United States of America, residing at New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Multiple Drilling-Machines, of which the following is a specification.

Our invention is an improvement in multiple drilling machines of that class in which a series of movable drill holders are flexibly connected with a series of driving pinions, rotated from a common gear.

Our object is to simplify this machine and improve its action.

What we have accomplished is illustrated in the accompanying drawings, in which—

Figure 1 shows the machine in side elevation. Fig. 2 represents a transverse vertical section of the machine, showing the face of the standard carrying the removable drill holders. Fig. 3 represents the upper left hand part of Fig. 1, in central longitudinal sections showing the movable drill holders and their immediate connections, and the devices for rotating these holders.

In these drawings all the working parts are mounted upon a main frame M'. The drill holders *f*, are journaled in sleeves which are on the inner ends of slides *C*, set radially in grooves in the face of a circular bracket *e*, on the frame. These slides have each an arm 10, extending back over the periphery of the bracket, and in each arm is held rotatably a screw 9, which engages with the bracket, and, when turned, moves its slider in or out. The sliders are held by clamping bolts set in the bracket and passing through slots in the sliders. The radial grooves, in which the sliders are placed are so arranged, as shown in Fig. 2, that either three or four sliders and drills may be used. Six of such grooves are there shown, only four being occupied. By taking out one of the sliders shown, and shifting one of the sliders to one of the remaining grooves, three drills may be used, placed symmetrically, since the unoccupied grooves, shown in Fig. 2 are equi-distant from each other, and from the lower vertical slider on the opposite side.

It will be observed, by reference to Fig. 3 that the drill holders *f*, are held in the sliders from longitudinal movement. The drills are carried in the sockets, shown in Fig. 2, in the ends of the holders *f*.

In the rear ends of the drill holders *f*, are formed square recesses *g*, in which are set the ends of connecting rods *E*, these ends being reduced to allow some side play. The rear ends of these rods are of similar form and fit into similar sockets *c*, in the forward ends of spindles *D*. These spindles *D*, are four in number, and are set in bearings in a bracket *M*, on the frame, in the same axial line as the bracket *e*. They are set symmetrically around a central shaft *A*, which also has its bearing in the bracket *M*, and is provided on its front end, with a pinion 2. This pinion is set against the face of the bracket, and in mesh with pinions *b*, also set against the bracket, on the ends of the spindles *D*, which project from the face of the bracket. By this arrangement the pinions are held firmly in engagement and the parts are in compact form.

In the spindles back of the sockets *c*, are recesses in which are set springs, bearing against interposed thrust plates *K*, and the parts are so adjusted that the yielding longitudinal movement of the rods *E*, caused by the radial movement of the sliders, is taken up by the springs, and the connection firmly maintained. The pinion and spindles are held in place and protected by means of a cover *d*. The main driving shaft *A*, has bearings, at 3 and 4, and has also suitable driving pulley 1. A pulley 5 also serves to transmit power to the feed mechanism.

In the operation of the machine in which the parts have been assembled as above described, the rotary motion of the spindle *A*, is transmitted to the several spindles *D*, and through these spindles and through the connecting rods *E*, to the several drill carriers *c* causing them to turn simultaneously and to bore into whatever work is moved toward them. The drill carriers may be adjusted independently so that they may drill holes in regular or irregular lines and at greater or less distance apart. The feed works and the table holding the parts to be drilled are mounted upon an extension of the frame. A slid-

ing part N, is mounted upon the extension in such a manner that it may be rigidly clamped at any distance from the drills. Within the sliding parts N, is a supplementary sliding part O, properly fitted and held in place by gibs 1. This supplementary sliding part O, carries a table P, upon which the work to be drilled is properly fastened. The feed of the material to the drills is effected by any suitable mechanism.

We claim—

1. In a multiple drilling machine, a series of rotary drill holders, held in bearings against longitudinal movement, said bearings being each connected with a radially movable slider, provided with adjusting screw and clamping bolt, and mounted in a bracket on the main frame, a second bracket, also on the main frame having a central bearing occupied by a main driving shaft A, a pinion upon the end of said shaft A, pinions b, on spindles D, having their bearings symmetrically

arranged in the bracket about the shaft A, sockets in said spindles and yielding connections between the spindles D, and the drill holders, all substantially as described.

2. A bracket having radially moving sliders, in which are mounted rotary drill carriers, having sockets in their front ends fitted to receive the drills, and flexibly connected at their rear ends with connecting rods E, pinions mounted in a part of the frame on spindles having recesses to receive the ends of the connecting rods E, and springs arranged to press against the ends of said connecting rods, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

DAVID E. WHITON.
LUCIUS E. WHITON.

Witnesses:

C. BARRY, Jr.,
F. W. GARD.