(Model.) 2 Sheets—Sheet 1.

G. A. FULLERTON.

DEVICE FOR CONVERTING ROTARY INTO RECIPROCATING MOTION.

No. 266,590. Patented Oct. 24, 1882.

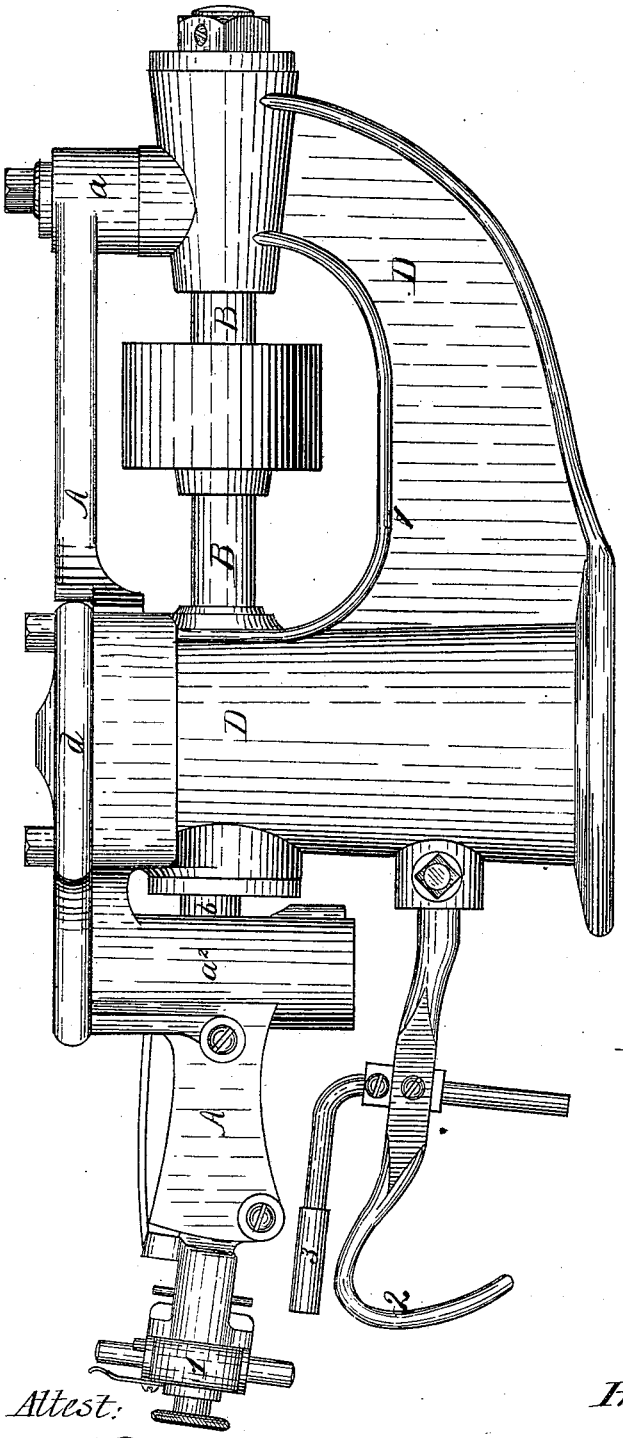

FIG. 1.

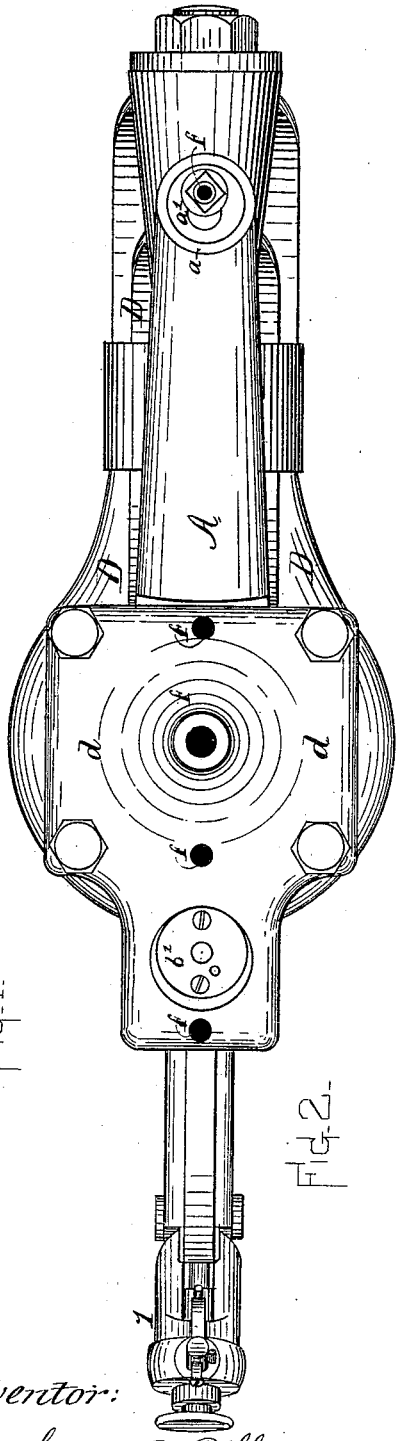

FIG. 2.

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Wm. Tittel.

J. R. Snow.

Inventor:

George A. Fullerton

by J. E. Maynadier

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(Model.) 2 Sheets—Sheet 2.

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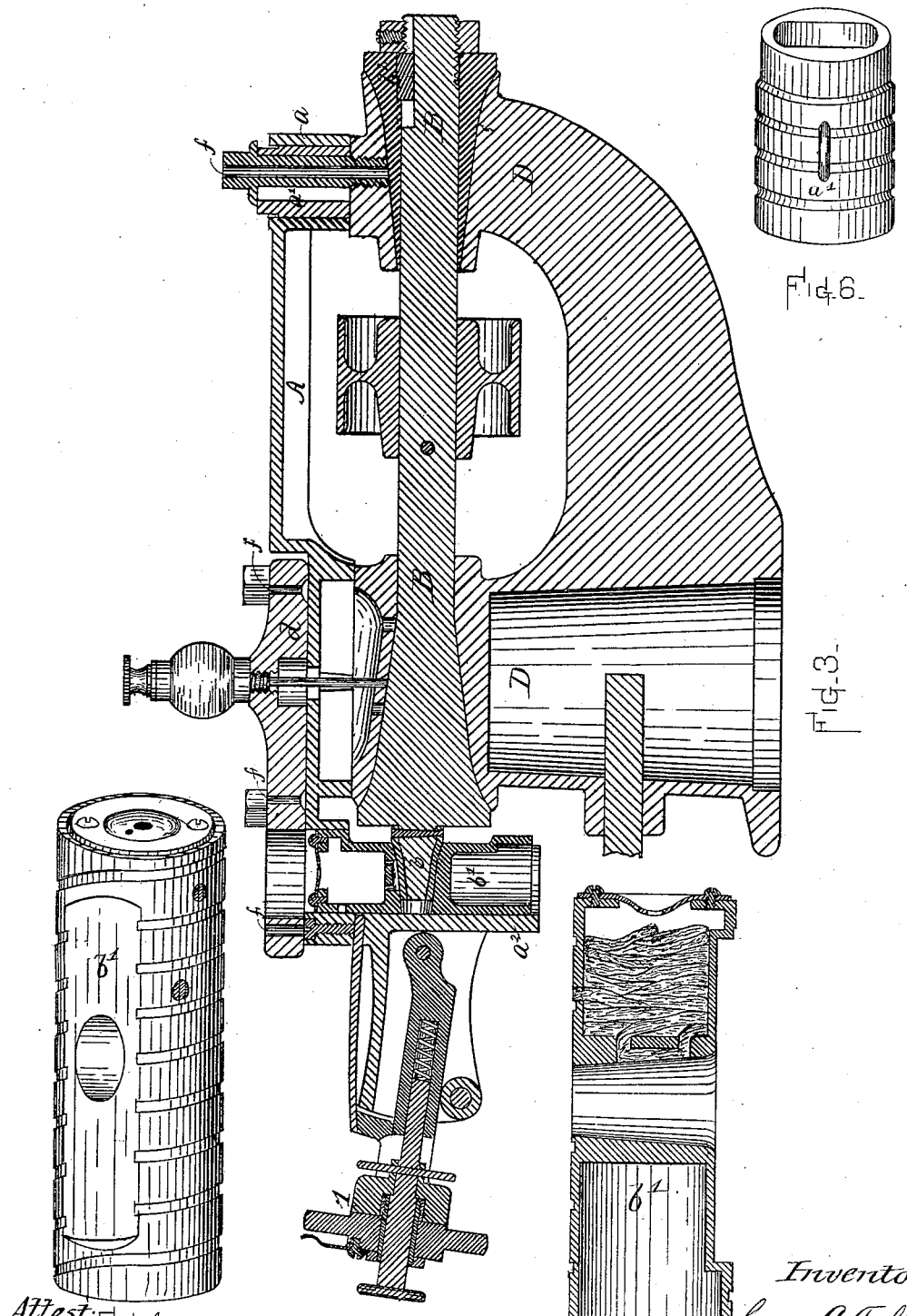

Fig. 6.

Fig. 3.

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE A. FULLERTON, OF BOSTON, MASSACHUSETTS.

DEVICE FOR CONVERTING ROTARY INTO RECIPROCATING MOTION.

SPECIFICATION forming part of Letters Patent No. 266,590, dated October 24, 1882.

Application filed September 30, 1880. (Model.)

To all whom it may concern:

Be it known that I, GEORGE A. FULLERTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Devices for Converting Rotary into Reciprocating Motion, of which the following is a specification.

My invention relates to improvements in the devices for converting rotary into reciprocating motion, in which the pin of a rotating crank reciprocates a cylindrical plug closely filling the interior of a hollow cylinder. The objects of my invention are to improve the devices for this purpose patented by Luther Dame, February 11, 1873, No. 135,697, by providing a continuous lubrication for the crank-pin and the cylindrical core, to afford facilities for the exact adjustment of the mechanism, and to perfect the details thereof.

In the accompanying drawings, Figure 1 is an elevation, Fig. 2 a plan, and Fig. 3 a lengthwise vertical section, of a machine embodying my invention. Fig. 4 is a perspective view, full size, of plug *b*. Fig. 5 is a section, full size, of the same. Fig. 6 is a perspective view of the journal, full size.

In machines for setting the edges of boot and shoe soles with a reciprocating tool a very rapid reciprocating motion must be given to the tool to attain the best results. In practice these tools travel from one end of their path to the other, over four thousand times a minute—that is to say, the tool makes over four thousand starts and over four thousand stops each minute.

I have shown my mechanism as it is constructed for reciprocating the tool-carrier of an edge-setter.

In the drawings, A is the carriage; *a*, its journal-box, and *a'* its journal; a^2, the box for the cylindrical plug; B, the shaft; *b*, the crank-pin, and *b'* its plug. The upper surface of the frame D and the under surface of the cap *d*, firmly fastened to the frame, form ways for the carriage, as will be clear from the drawings.

The numbered parts need not be here described in detail, as they are especially adapted for finishing sole-edges, 1 being the tool-holder, 2 the finger-rest, and 3 the gas-burner.

The revolution of shaft B causes the crank-pin *b* to move in a circle, and as the crank-pin *b* enters plug *b'* that plug is moved not only sidewise, but also endwise. Its endwise motion simply moves it up and down in its box a^2; but its sidewise motion causes box a^2 to move back and forth, thereby giving the desired reciprocating motion to the tool-holder which is carried by carriage A, of which box a^2 is a part, and as carriage A is journaled at its rear end the box a^2 must also have a slight motion about the plug *b'*, and it is for this reason that the plug *b'* must be cylindrical, the distinguishing characteristic of this part of my invention being the use of a crank-pin and plug with a carriage which is journaled at its rear end. This necessitates provision for enabling the box of the plug to move slightly around the plug, for both the box a^2 and its plug *b'* oscillate or move over a short arc while the end of the crank-pin *b* moves in a vertical plane. The oscillation of the carriage, as distinguished from its reciprocation in one plane, is a practical improvement of great value in machines where the rate of speed is very high, not because there is any substantial difference between the short arc in which the end of the carriage travels and a straight line, but because there is far less strain and wear when the carriage oscillates than when it reciprocates.

The shaft B is made conoidal where it passes through its boxes, and its boxes made to correspond in a well-known manner. The sleeve b^2 is adjustable on the shaft, (usually by being splined upon the shaft,) and the journal *a'* is also adjustable, usually by connecting it to frame D by means of a screw-bolt passing through a slot in the journal *a'*, as shown in Figs. 2 and 3. The crank-pin *b* is also conoidal and fits in a corresponding box in the plug *b'*. As the shaft revolves over two thousand times per minute, any ill-adjustment of the shaft in its boxes or of the crank-pin in its plug will not only make a very objectionable humming noise, but will make the mechanism wear very rapidly. By the first adjustment—that is, of sleeve b^2 on its shaft—the shaft is adjusted in its boxes with the utmost accuracy; but at the same time the crank-pin *b* is necessarily pulled a little too far out of its plug *b'*; but the plug *b'* is readily adjusted with the utmost accuracy on its pin *b* by adjusting the journal *a'* on frame D. The entire adjustment is so simple that it can be readily and quickly made by the operator of the machine as soon as the least signs

of wear begin to appear. The holes *f* are oil-holes, and the plug is best made hollow in its upper part to receive an absorbent material and oil. A spiral groove on the plug *b'* is also desirable to distribute the oil between it and its box. The pin *b* is provided with a sleeve, as shown in Fig. 3, which can be readily replaced when worn. The proper oiling of the plug is best effected by carrying wicking from the interior to the surface, as shown in Fig. 4, which is a perspective view of the plug, and in Fig. 5, which is a section, full size, showing how the wicking is arranged. This method of oiling the plug and its box by making the plug itself an oil-cup is new with me.

The journal *a'* is shown in perspective in Fig. 6, full size. The oil is best distributed on this journal by means of grooves around it connected one with the other by connecting-grooves, as shown.

I disclaim of course all that is described in the Dame patent above mentioned, the main feature of my invention consisting in the arrangement of the carriage on a pivot near its rear end and parallel with the driving-shaft in connection with the crank-pin and its cylindrical plug revolving in a box near the front end of the carriage.

What I claim as my invention is—

1. In combination, pivoted carriage A and shaft B, arranged together, as shown, by means of crank *b* and plug *b'*, the pivot *a'* of the carriage being near one end and the box a^2 for plug *b'* near the other end of the carriage, all substantially as described.

2. In combination, carriage A, its journal *a*, made adjustable, substantially as described, shaft B, with its conoidal journals, one of which is adjustable, frame D, with its conoidal journal-boxes, crank-pin *b*, and plug *b'*, all substantially as and for the purpose specified.

3. The plug *b'*, formed with a cavity in its interior for containing a lubricant, in combination with its box a^2, substantially as set forth.

GEO. A. FULLERTON.

Witnesses:
J. E. MAYNADIER,
J. R. SNOW.