

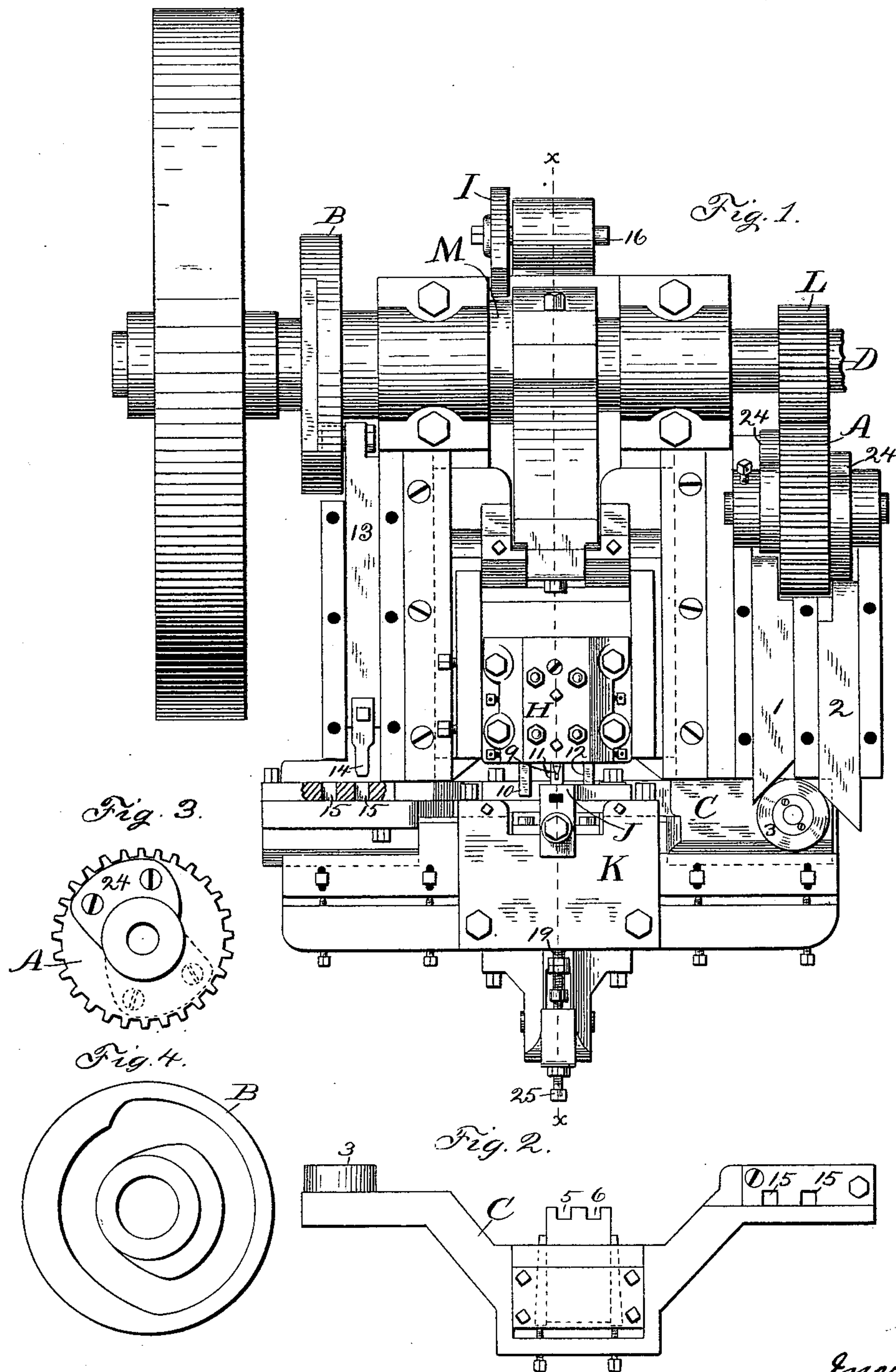
(No Model.)

4 Sheets—Sheet 1.

G. M. DUNHAM.
NUT MACHINE.

No. 386,805.

Patented July 31, 1888.



Witnesses,
John Edwards Jr.,
J. B. Case

Inventor,
George M. Dunham,
By James Shepard atty.

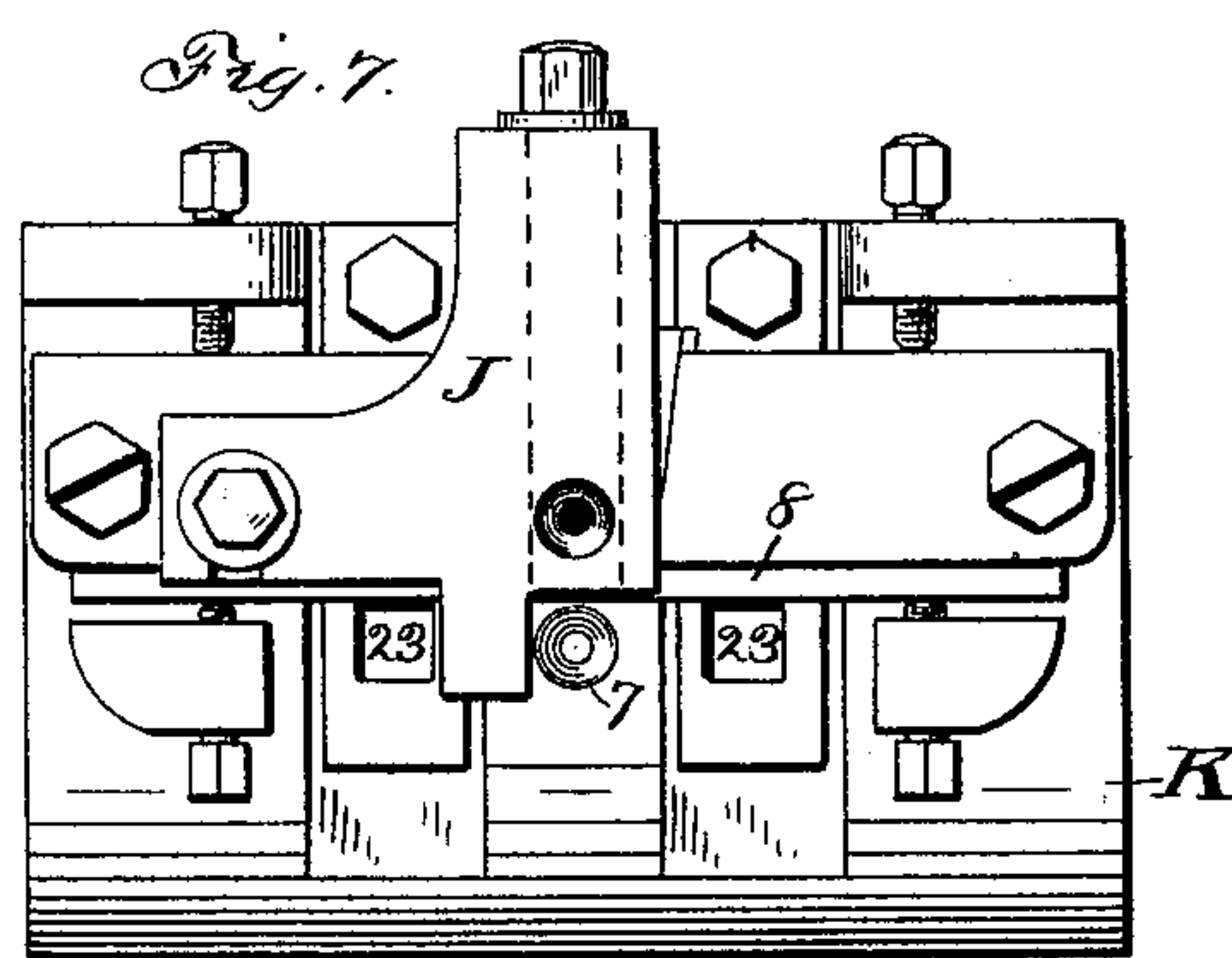
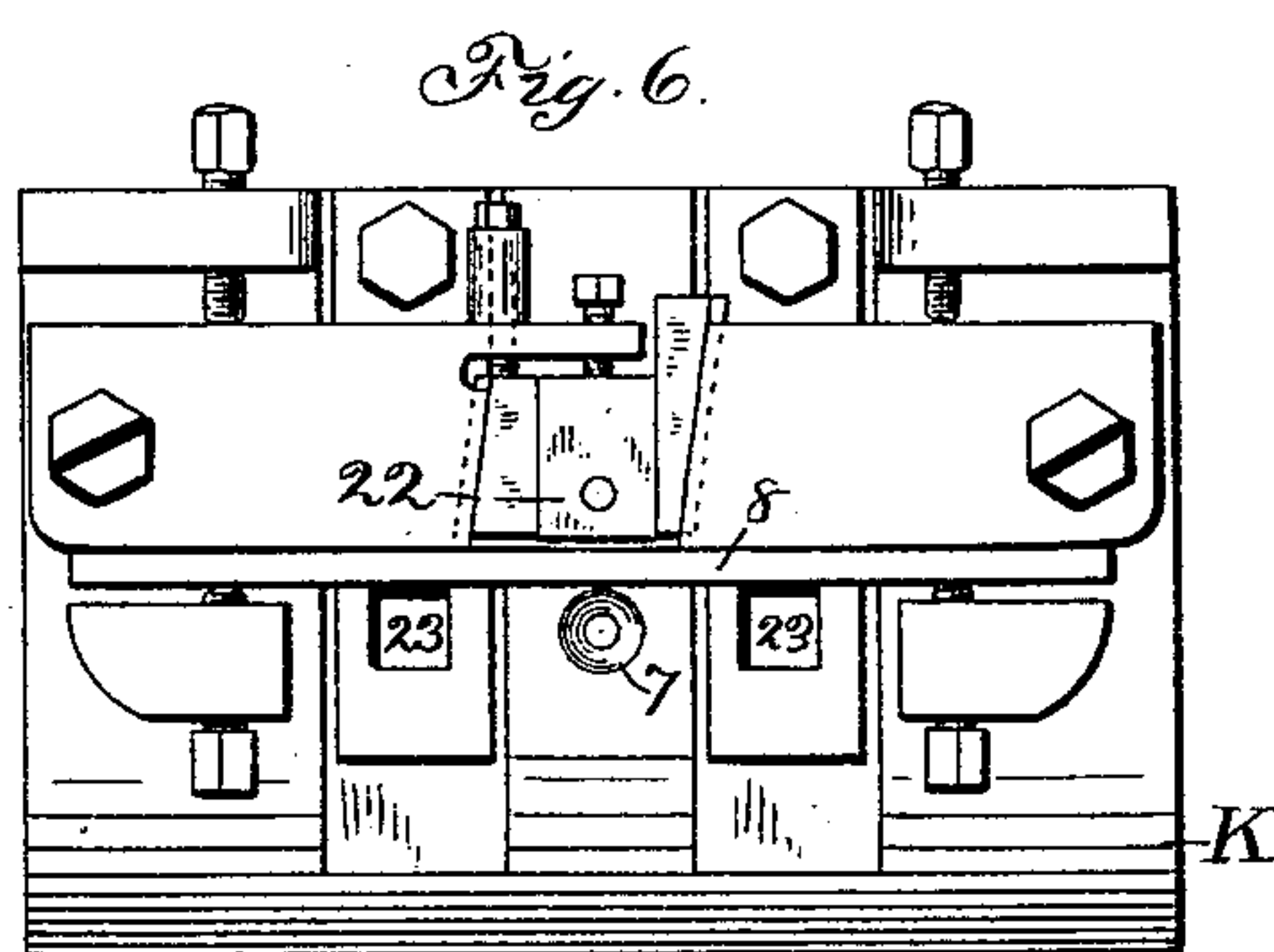
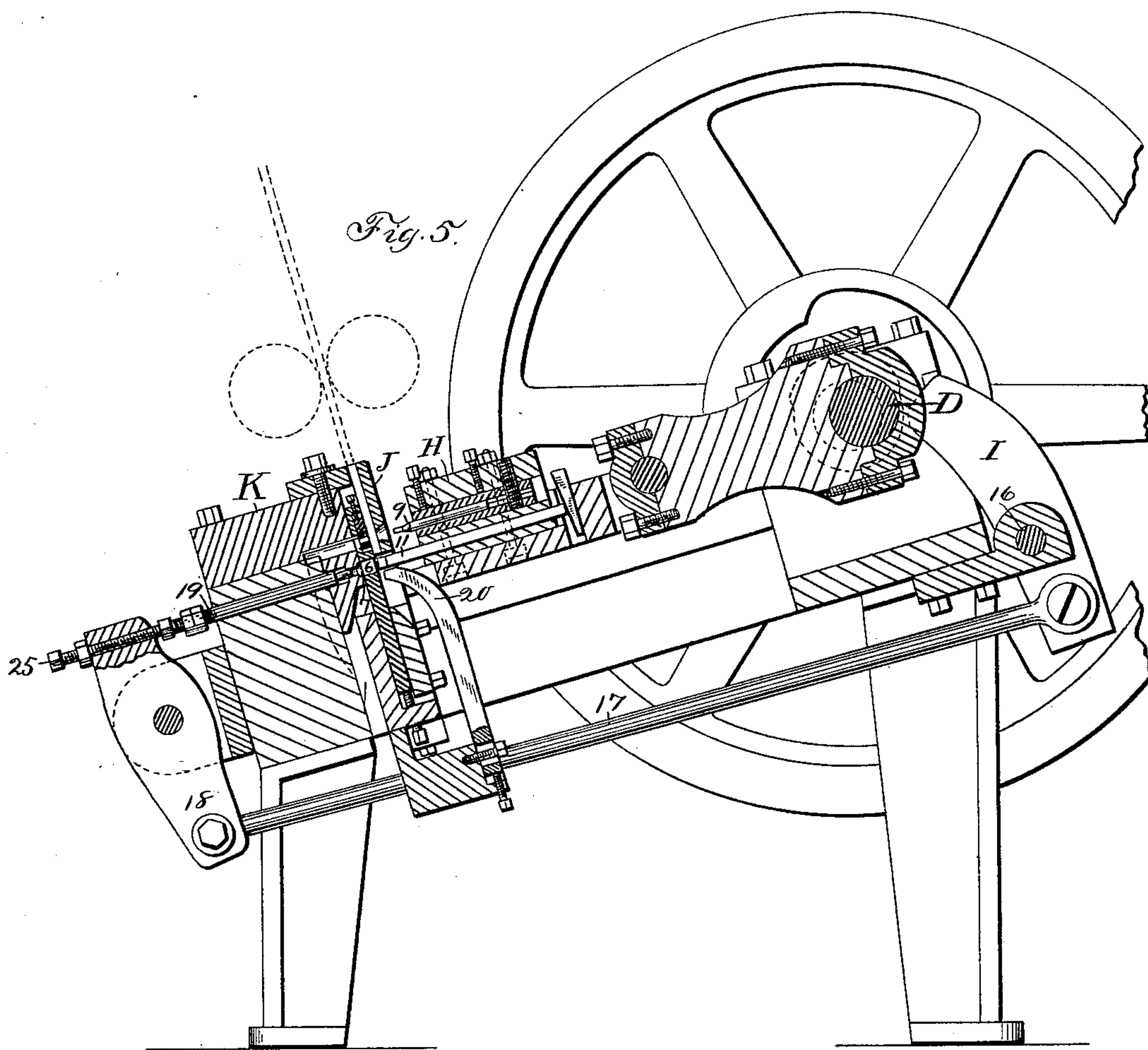
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4 Sheets—Sheet 2.

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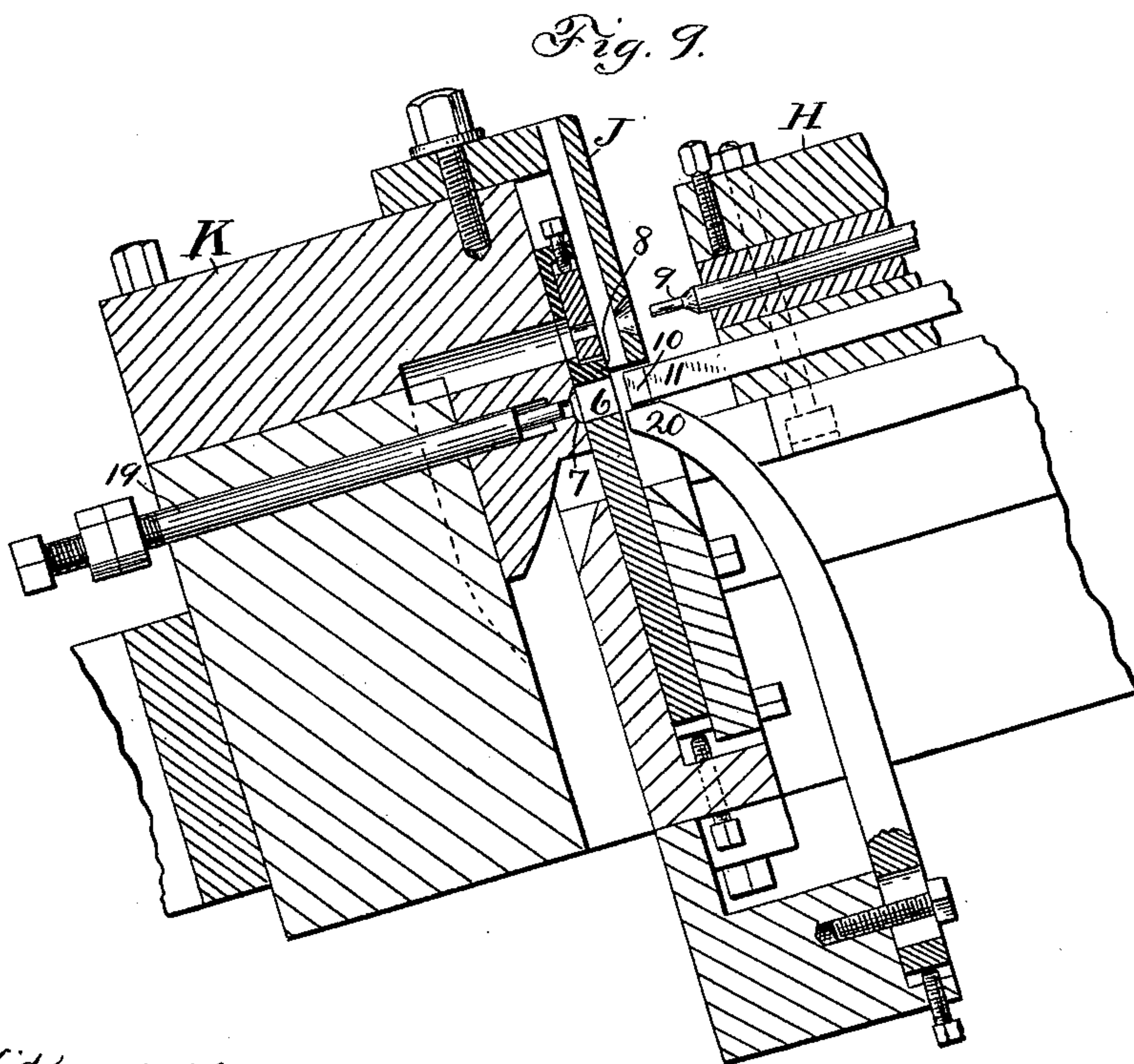
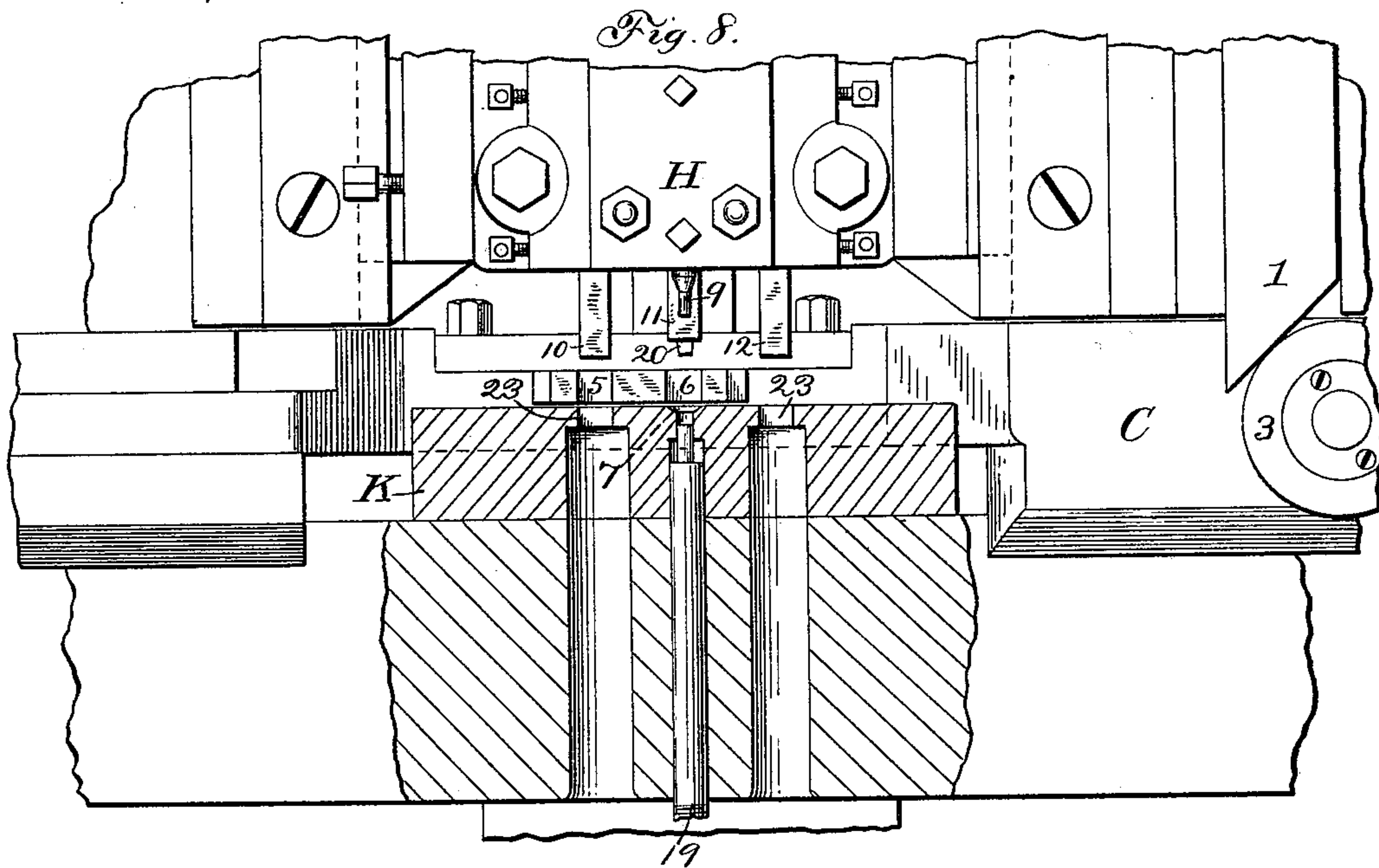
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No. 386,805.

Patented July 31, 1888.



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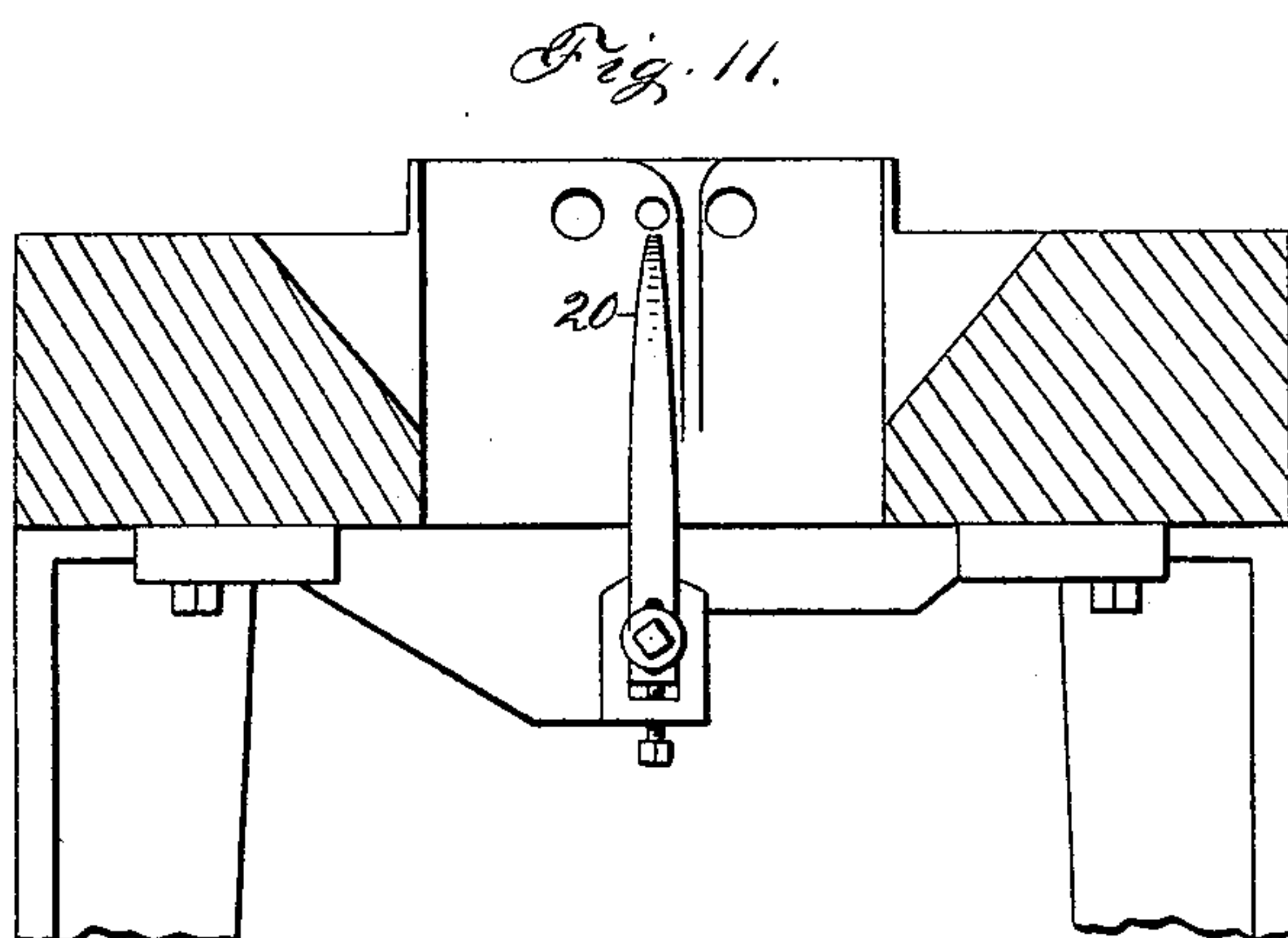
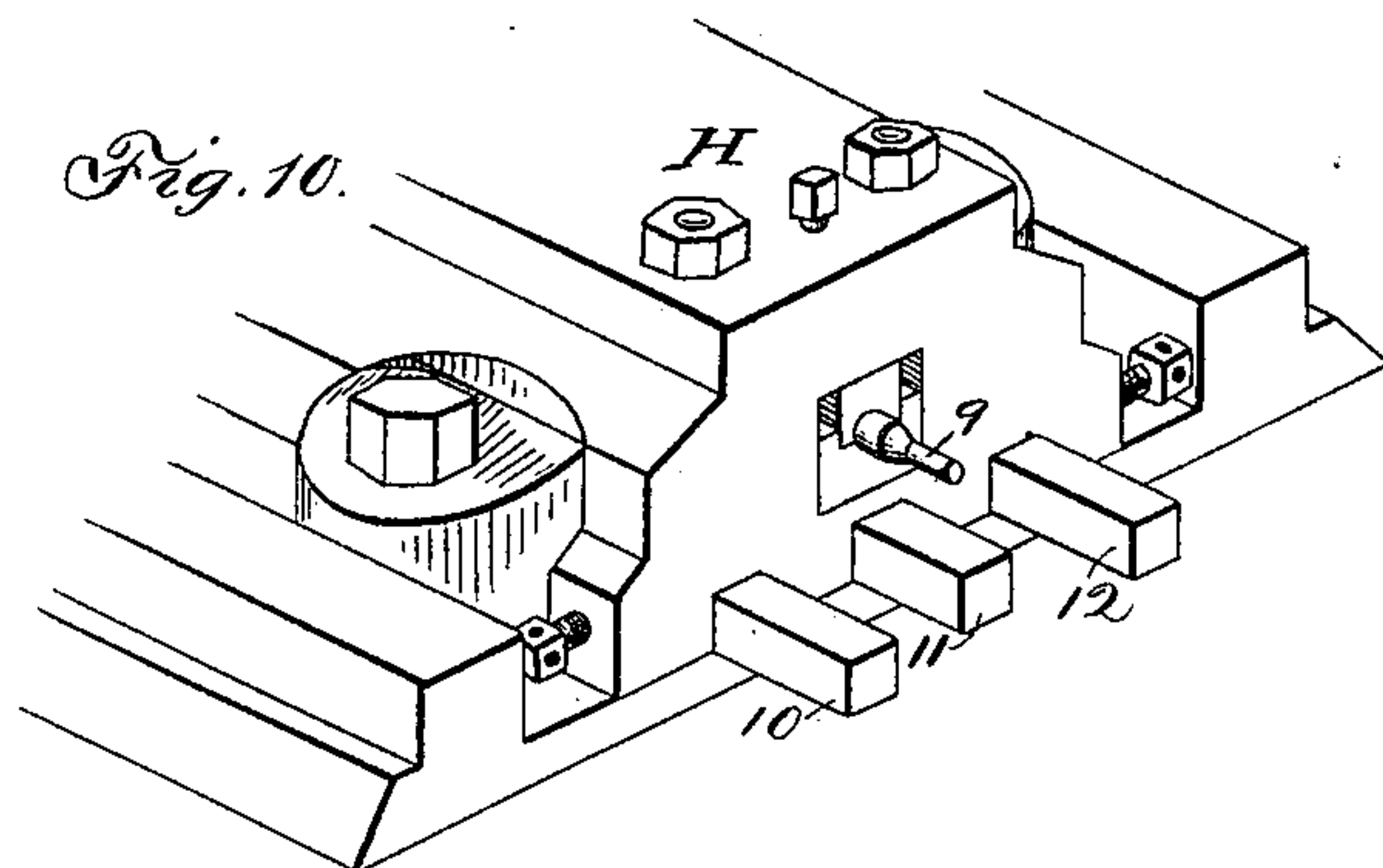
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NUT MACHINE.

No. 386,805.

Patented July 31, 1888.



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UNITED STATES PATENT OFFICE.

GEORGE M. DUNHAM, OF UNIONVILLE, CONNECTICUT, ASSIGNOR TO THE
DUNHAM NUT MACHINE COMPANY, OF SAME PLACE.

NUT-MACHINE.

SPECIFICATION forming part of Letters Patent No. 386,805, dated July 31, 1888.

Application filed June 13, 1887. Serial No. 241,156. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. DUNHAM, a citizen of the United States, residing at Unionville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Nut-Machines, of which the following is a specification.

My invention relates to improvements in nut-machines; and the object of my invention is to improve the efficiency and construction of many of the parts and the machine as a whole.

In the accompanying drawings, Figure 1 is a plan view of my machine with some of the caps removed. Fig. 2 is an elevation of a detached part, which I term the "carrier," the same being viewed from the side which faces the driving-shaft. Fig. 3 is a side elevation of the cam-wheel A of Fig. 1. Fig. 4 is a side elevation of the grooved cam B of Fig. 1. Fig. 5 is a vertical section, partly in elevation, of my machine on line *xx* of Fig. 1. Fig. 6 is a detached view of the die-bed and dies, showing the side which faces the driving-shaft, the carrier and picker being removed. Fig. 7 is a like view of the same with the picker attached. Fig. 8 is a plan view, partly in horizontal section, of a portion of said machine on an enlarged scale. Fig. 9 is a horizontal section, partly in elevation, of a portion of said machine corresponding with Fig. 5, but on an enlarged scale. Fig. 10 is a perspective view, on the same scale as the two preceding figures, of the several punches and the slide which carries them; and Fig. 11 is a vertical section of the front end of the frame, showing the side which faces the main shaft of the machine.

The slide H, (see Fig. 10,) bearing a round punch, 9, for punching the central hole of the nut, a blanking-punch, 11, and two trimming-punches, 10 and 12, is reciprocated in suitable ways by a crank or eccentric on the main shaft D, as in ordinary nut-machines and power-presses. The die-bed K (shown separately in Figs. 6 and 7) contains the stationary shear-blade 8, for acting against one side of the blanking-punch 11, the round die 22 for the punch 9, two trimming-dies, 23, the trimming-punches, and a crowning-die, 7, which acts in opposition to the blanking-punch 11. Moving transversely over the face of this die-bed K, I ar-

range the carrier or transferrer C, containing two recesses, 5 and 6, which have the double function of partial dies acting in connection with the stationary shear-blade 8 and blanking-punch 11, to sever a blank from the bar, and also to serve as a pocket or receptacle for holding the nut while it is carried or transferred from in front of the blanking-punch to one side to a position in front of the trimming-punches.

While I have shown the recesses 5 and 6 in the carrier as having three sides, two sides are sufficient for performing the work intended for them. This carrier, as shown, is reciprocated by means of two slides, 1 and 2, beveled in opposite directions, as shown in Fig. 1, and bearing upon a friction-roller, 3. The slides 1 and 2 are reciprocated by means of cams 24, arranged on opposite sides of the wheel A, so as to act alternately. The wheel A is driven by wheel L on the main shaft D, the wheel L having half the number of teeth of the wheel A, whereby the press slide H has two reciprocations imparted to it for one reciprocation of the carrier C. It is of my invention to employ mechanism for reciprocating the carrier once for every two reciprocations of the slide; but the particular mechanism herein shown for so doing was invented by another party, and consequently cannot of itself be claimed by me. The same is true with reference to the particular mechanism for securing and adjusting the die 22. One end of the carrier C, I provide with sockets 15 15, for the reception of the holding-pin 14 on the slide 13, said slide being reciprocated by means of the grooved cam B on the main shaft D.

Over the face of the die bed K, and extending partially over the stationary shear 8 and the middle portion of the carrier C, there is a picker, J, containing an orifice through which the punch 9 works, and also a groove or guide through which a bar is fed to the machine by means of feed-rollers or other suitable mechanism, the position of said bar and rollers being indicated by broken lines in Fig. 5. designates a gage or stop for the end of the bar to strike against as it is fed into the machine.

I is a lever pivoted on an axle, 16, one end of which lever is acted upon by the cam M, Fig. 1, on the main shaft D, (said cam also

being indicated in side view by broken lines in Fig. 5.) The opposite end of the lever I has a rod, 17, attached to it, which rod is also connected with the lever 18. One end of the lever 18 bears a set-screw, 25, the end of which bears against the knock-out 19, whereby said knock-out is projected into the crowning-die 7 at every revolution of the main shaft.

In operation the bar is first acted upon by the punch 9 and die 22 for punching a round hole. At the same time the blanking-punch 11, the stationary shear-blade 8, and the opposing side of one recess in the carrier C act to cut a blank from the bar, cutting the bar when it is of the proper width upon two sides only of the nut-blank. While not absolutely necessary to cut the nut-blank on two sides in severing it from a bar of the proper width, it is best to feed the bar far enough so that a light shaving will be cut off from that side of the nut-blank which is nearest the end of the bar, thereby insuring a full nut blank. This shaving of the end of the bar is performed by the lower side or bottom of the recesses 5 and 6 and the blanking-punch 11, and the bar is severed at the opposite side of the nut-blank by said punch and the shear 8. When a bar which is wider than the recess 5 and 6 is fed into the machine, the sides of said recesses, acting in connection with the punch 11, cut the bar on the remaining two sides of the nut-blank. The continued motion of the blanking-punch also forces the blank against the crowning-die 7 to round or swage one side of the blank. The knockout then operates to loosen the blank from the crowning-die, but still leaves it in the recess of the carrier. Supposing the nut to have been blanked within the recess 6, the carrier is next moved to the right so as to bring the recess 5 in front of the blanking-punch, and at the same time to transfer or carry the blank to a position in front of the trimming-punch 12, so that at the next movement of the slide H the blank will be trimmed. Meanwhile another hole is punched by the punch 9, another blank cut off and crowned, and as the carrier moves to the left the blank will be trimmed by the trimming-punch 10. Thus it will be seen that the sides of the recesses 5 and 6 that are opposed to the stationary shear 8 act as partial dies in blanking out the nut, while the sides which are formed on the metal between these recesses serve to push the nut to one side for trimming, the blanking-punch having a central position and trimming dies and punches upon either side thereof acting alternately, one blank being carried to the right for trimming and the succeeding blank to the left, and so on. The cams are so timed that the punches in the press-slide act while the carrier C is at rest, and also so that the holding-pin 14 locks the slide in position just prior to the cutting action of the punches.

I claim as my invention—

1. In a nut-machine, the combination of a carrier having two recesses serving as partial dies, a stationary shear-blade, and a blanking-out punch, substantially as described, and for the purpose specified.
2. The combination of a carrier having two recesses and a trimming punch and die, substantially as described, and for the purpose specified.
3. The combination of a carrier having two recesses and a blanking-out punch and trimming punch and die, substantially as described, and for the purpose specified.
4. The combination of a carrier having two recesses, a swaging-die, and knock-out pin, substantially as described, and for the purpose specified.
5. The combination of blanking and trimming dies, a carrier having two recesses for receiving the nut-blanks, and mechanism for locking the carrier during the action of the dies, substantially as described, and for the purpose specified.
6. The combination of a central blanking-out shear and two trimming-punches, arranged one on each side of said blanking-shear, substantially as described, and for the purpose specified.
7. The combination of a swage or crowning-die and two trimming-dies, arranged one on each side of said crowning-die, substantially as described, and for the purpose specified.
8. The combination of a swage and knock-out pin and two trimming-dies, one on each side of said swage, substantially as described, and for the purpose specified.
9. The combination of a punch and die for punching the central hole, a blanking-out shear and die, a swage and knock out pin, two trimming punches and dies, said trimming punches and dies located one on each side of said blanking-out shear, substantially as described, and for the purpose specified.
10. The combination of the slide H, bearing punches, the stationary dies and shear, the carrier having two recesses which serve as partial dies, and operating mechanism for said slide and carrier, whereby the slide has two motions to one of the carrier, substantially as described, and for the purpose specified.
11. The combination of a crowning-die, a trimming-die, a blanking-punch, and a carrier moving transversely to the movement of said blanking-punch, and having a recess, which serves the double function of blanking-die in connection with said blanking-punch, and pocket for carrying the blank, substantially as described, and for the purpose specified.

GEORGE M. DUNHAM.

Witnesses:

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GEORGE DUNHAM.