

H. B. KINNEY.

Machine for Making Forks.

No. 56,954.

Patented Aug. 7, 1866.

Fig. 1.

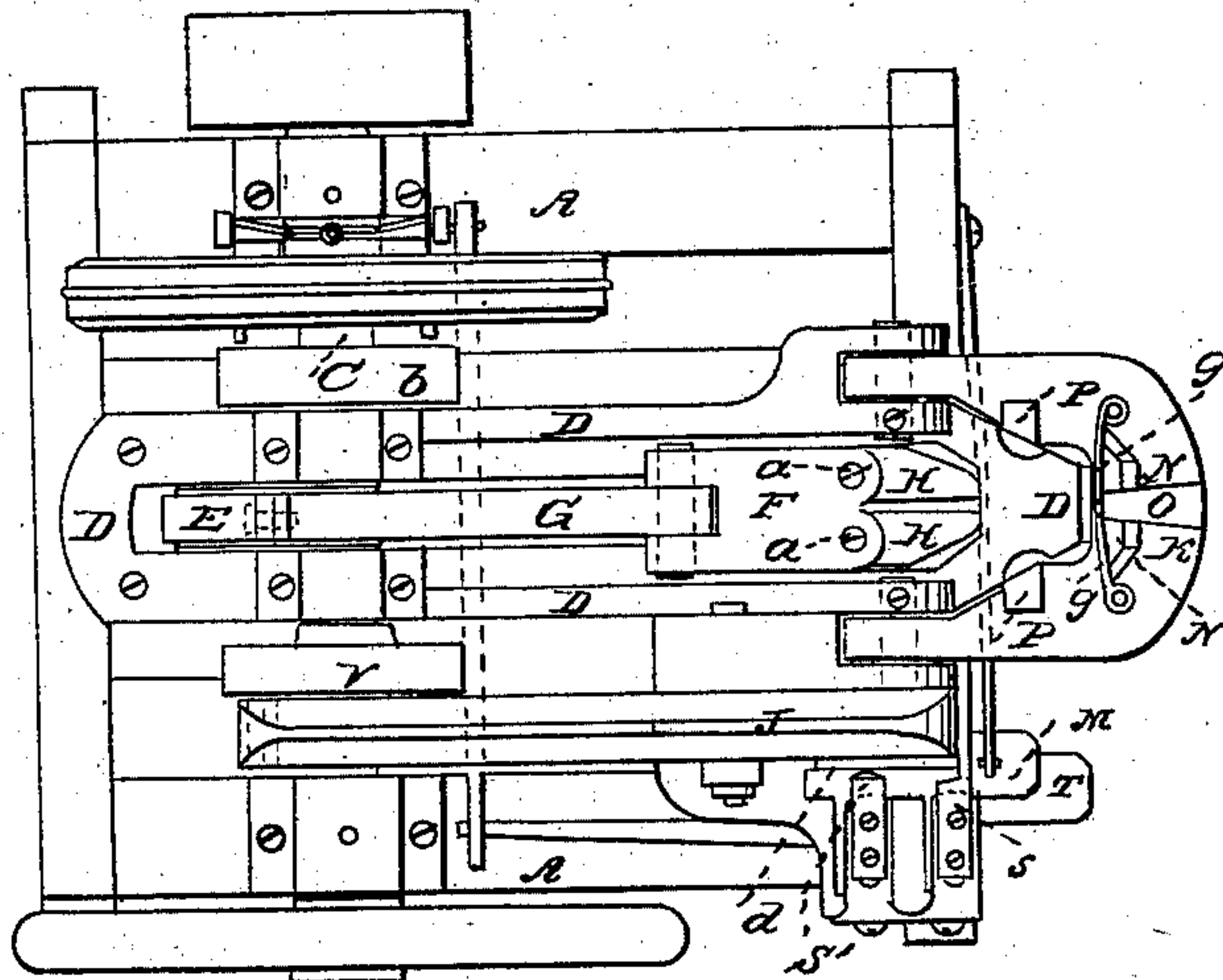


Fig. 2.

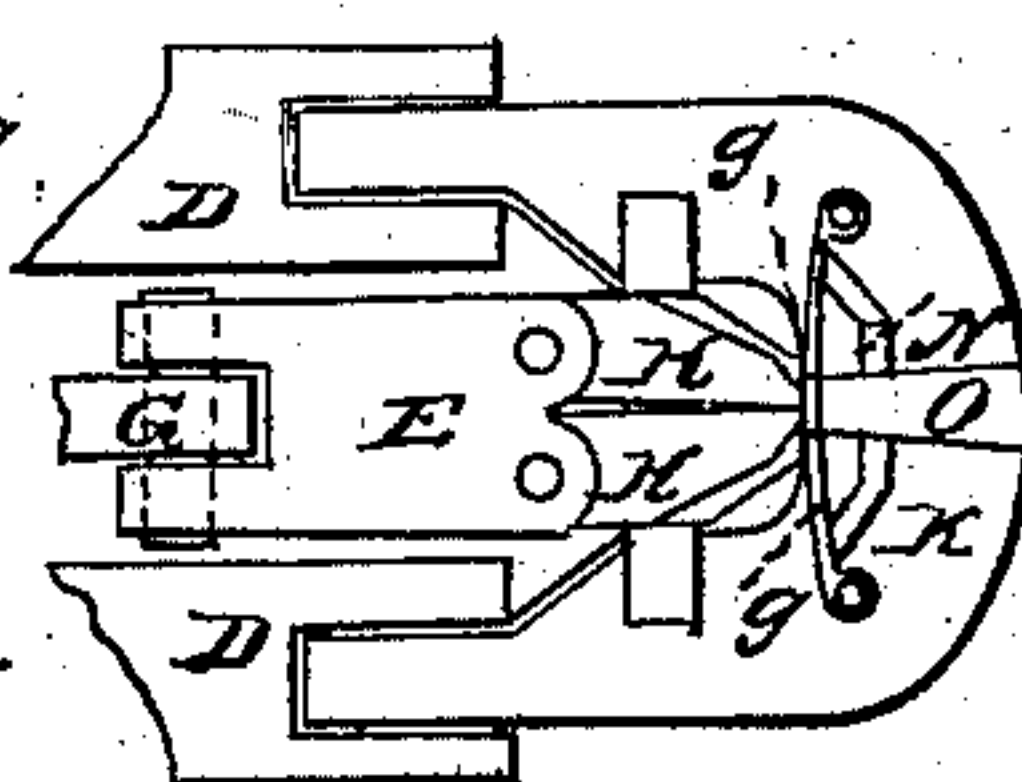


Fig 4.

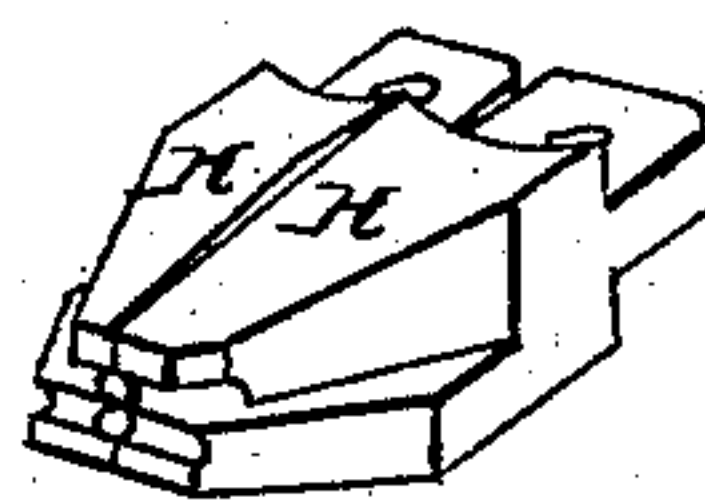


Fig. 5.

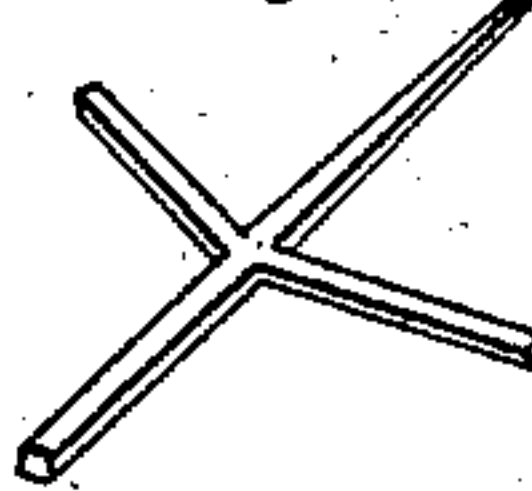
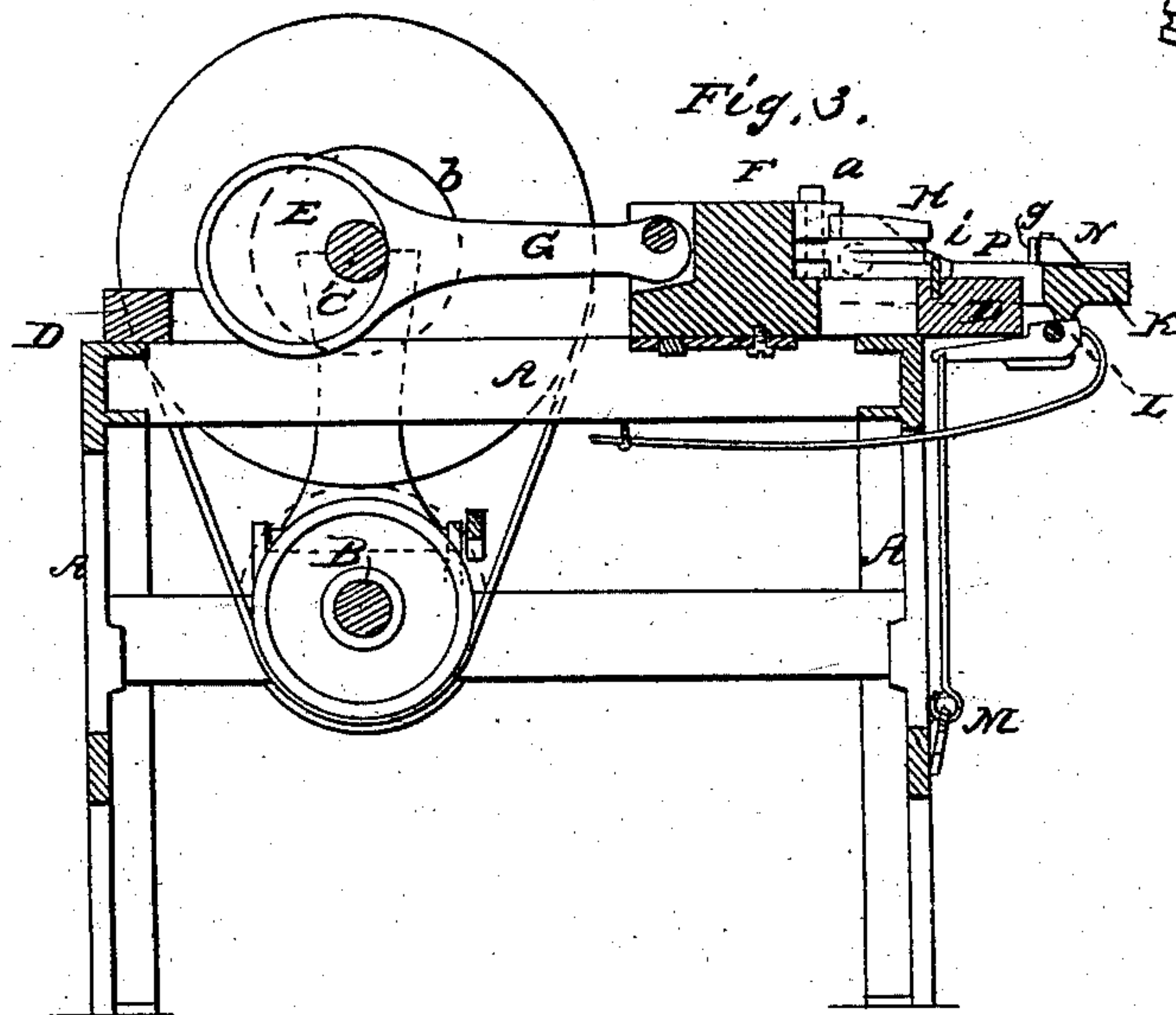


Fig. 3.



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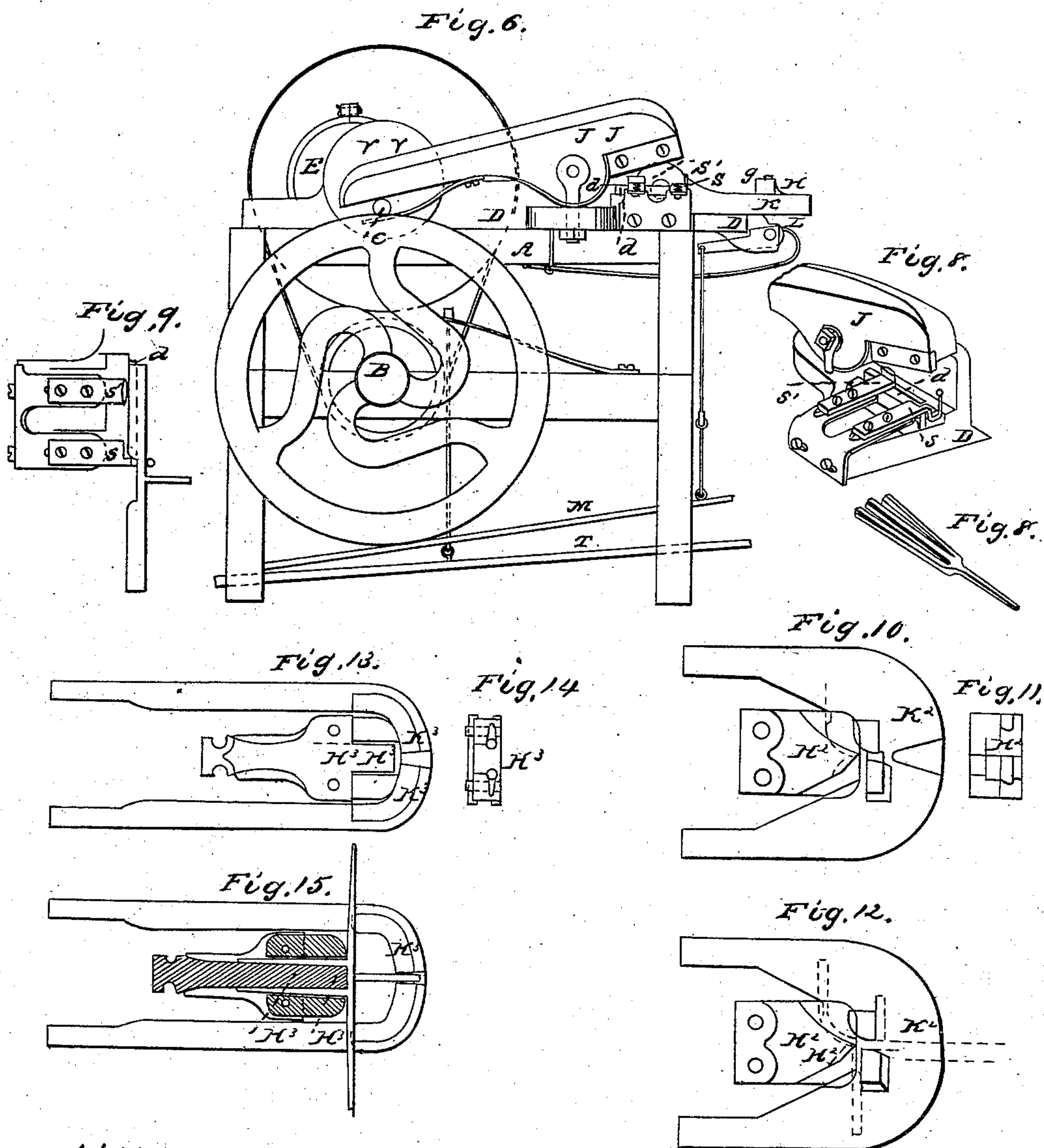
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

HORACE B. KINNEY, OF LEONARDSVILLE, NEW YORK.

IMPROVEMENT IN MACHINERY FOR MAKING FORKS.

Specification forming part of Letters Patent No. 56,954, dated August 7, 1866.

To all whom it may concern:

Be it known that I, HORACE B. KINNEY, of Leonardsville, Madison county, State of New York, have invented a new and Improved Machine for Making Forks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, Sheet 1, is a plan view of the machine, having dies and a yoke adapted for three-tined forks. Fig. 2 shows the dies and yoke of Fig. 1 in position for completing the spreading of the blank tines. Fig. 3 is a longitudinal section taken vertically through the center of the machine. Fig. 4 is a perspective view of the dies which form the split fork-blanks, as shown in Fig. 5. Fig. 6, Sheet 2, is a side elevation of that side of the machine which carries the shears and blank-guides. Fig. 7 is a perspective view of the splitting-shears and guides. Fig. 8 is a perspective view of a three-tined-fork blank before it is subjected to the bending devices. Fig. 9 is a plan view, showing a blank for a four-tined fork adjusted in a position for being split by the shears. Figs. 10 and 11 are views of dies and their yoke for bending four-tined-fork blanks. Fig. 12 shows the manner of spreading a four-tined-fork blank by the dies and yoke of Figs. 10 and 11. Figs. 13, 14, and 15 are views of the dies and yoke for shaping a four-tined fork after the tines have been drawn out.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to a new and useful machine which is adapted for shearing or splitting steel fork-blanks, and then bending and swaging the tines of forks having two or more tines, and finally shaping and setting the tines, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the frame or table for supporting the fork splitting and bending devices. B is the driving-shaft, which gives motion to shaft C by means of belt or gearing. This shaft C has its bearings in bed-plate D, and is provided with an eccentric wheel, E, which communicates a reciprocating motion to a sliding head,

F, by means of the pitman G, as shown in Figs. 1 and 3.

The sliding head-block F is fitted to run in a groove in the bed-plate D, and it is furnished with removable dies H H, which are attached by pivots *a a*, so that they will vibrate by the action of fixed pin *i*, which is set in the bed-plate D. This pin *i* serves to open the dies on their backward movement for the reception of the central prong of the three-tined pitchfork, as shown in Fig. 1, after the blank has been separated by the shears, as shown in Figs. 5 and 8.

K is a yoke, which is hinged by strong bolts to ears which are cast on the bed-plate D, and which rests on the cam L that is connected to the foot-lever M. This lever, in its downward movement, operates the cam L and raises the yoke K to adjust this yoke to the various-shaped dies necessary for the different forms of work required.

On the yoke K are projections N N, with the recess O between them to receive the shank of the pitchfork in spreading and forging it. Two movements of the yoke K are required in forging the common three-tined pitchfork. The first or upward movement brings the projections N N into line with the upper grooves of the dies H H, which dies are of wedge form, so as to partly open the blank tines or prongs of the pitchfork. The second or downward movement of the yoke K brings the projections N N in front of the square ends of the dies H H and turns the two outside tines of the fork outward, as shown in Fig. 5. The two guide-blocks P P inside of the yoke K serve to close the dies H H in their forward movements, thus equalizing the size of the tines at their shoulders, and, what is most important, they set the central tine or prong on a line with the shank of the fork.

The lever or treadle T is arranged to operate the clutch *b* on the shaft C, thus starting or stopping the movement of the head-block F and its dies H H at the will of the operator, while the driving-shaft B remains in motion.

The shears J are operated by means of a pin, *c*, which is set in the face of a strong collar, V, on the shaft C, and the upper portion of the shears is hinged to the bed-plate D and works on its fulcrum R, as shown in Fig. 6.

The lower shear-plate, *a*, is provided with gages *S S'*, which may be adjusted by the set-screws, so as to bear on the fork-pattern on each side. The gage *S* bears on the right side of the pattern or blank, and is curved to leave room for the shank of the pattern, and the gage *S'* bears on the left side, near the opposite end of the pattern, thus insuring an equal division of the stock in different widths of patterns, and also allowing the shears to cut straight or diagonally, as may be required, to equalize the tines of the pitchfork as to their size.

In swaging and bending the three-tined fork and a four-tined or manure fork I contemplate using three or more sets of dies and yokes.

When the yoke *K* and the dies *H H*, which I have above described, are removed, the yoke *K*² and the die *H*² may be set in the same supports for bending the four-tined or manure fork. (Shown in Figs. 10, 11, and 12.)

It is the object of this arrangement of the yoke *K*² and die *H*² to turn the two outside tines of the manure-fork outward and backward, while the two central tines are set at right angles to and at equal distances from the shank of the pattern, as shown in Fig. 12. This operation requires two heatings of the steel, one-half of the bending being accomplished at each heating.

In bending the four-tined fork, after it is wrought by the trip-hammer, the yoke *K*³ and the die *H*³ are inserted in the machine, being substituted in place of the yokes and dies above described.

In the operation of these devices the yoke *K*³ and the die *H*³ operate as follows: The yoke *K*³, in its first position, sets below the line of the bed-plate *D*, which allows the two central tines of the manure-fork to be inserted into the apertures or holes in the die *H*³, the two outside prongs or tines standing out at right angles. By raising the yoke *K*³ to its second position by pressing upon the treadle *M*, the tines standing outward will be brought into the grooves on the die *H*³ and against the shoulders on the yoke *K*³, as shown in Fig. 15, when the forward movement of the die will bend the tines to their proper position parallel to the two central tines, and at the same time set the shoulders and press the head of the fork to a given size, thus giving a perfect form to the fork.

The pivoted plates *g g*, which are arranged upon the yoke *K* in front of the projections *N N*, are used to press equally upon both sides of the tang at or near its junction with its head, for the purpose of sustaining this tang in a central position with respect to the tines during the act of spreading and forging the blanks. These plates *g g* are so arranged upon the yoke *K* that they may be wedged up, so as

to diminish the space occupied by the fork-blank, in order to increase the lateral pressure thereon to any degree required.

It will be seen, by reference to Figs. 3 and 4, that the forward ends of the dies *H H* are slightly grooved. This is for the purpose of pressing the shoulders of the fork at and near the junction of the tines with the tang, and also with the head of the fork, in round, square, or oval form, as may be required.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Spreading and swaging the split blanks of two or many tined forks by means of a die-block and supports, constructed and operating substantially as described.

2. The adjustable yoke-support *K*, or its equivalent, in combination with a wedge-shaped reciprocating spreading-die, substantially as described.

3. Sustaining the tang and the tines of a fork-blank, during the act of forming the shoulders, against and between supports constructed and arranged substantially as described.

4. The movable shoulder-plates *g g*, in combination with back supports, *N*, and a reciprocating die or dies, *H*, substantially as described.

5. The yoke *K*³, with shoulders on it, in combination with a reciprocating shaping-die, *H*³, or its equivalent, for shaping the forks after their tines have been drawn out under the hammer, substantially as described.

6. The combination of splitting-shears *J* with a fork bending and swaging machine, constructed substantially as described, said shears being actuated by the driving-shaft of the swaging-dies, substantially as described.

7. The gages *S S'*, to support the fork-blanks in proper position during the operation of the shears in splitting these blanks, constructed and arranged substantially as described.

8. The dies, constructed and arranged substantially as described, for making rounded or square shoulders at the junction of the tines of the fork-blank with the tang or head, as set forth.

9. The guide-blocks *P P*, in combination with adjustable shoulder-plates *g g*, or their equivalents, supported substantially as described, and reciprocating dies *H H*, the guides *P P* closing the dies *H H* in their forward movement toward plates *g g*, substantially as described.

HORACE B. KINNEY.

Witnesses:

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H. C. ST. JOHN.