

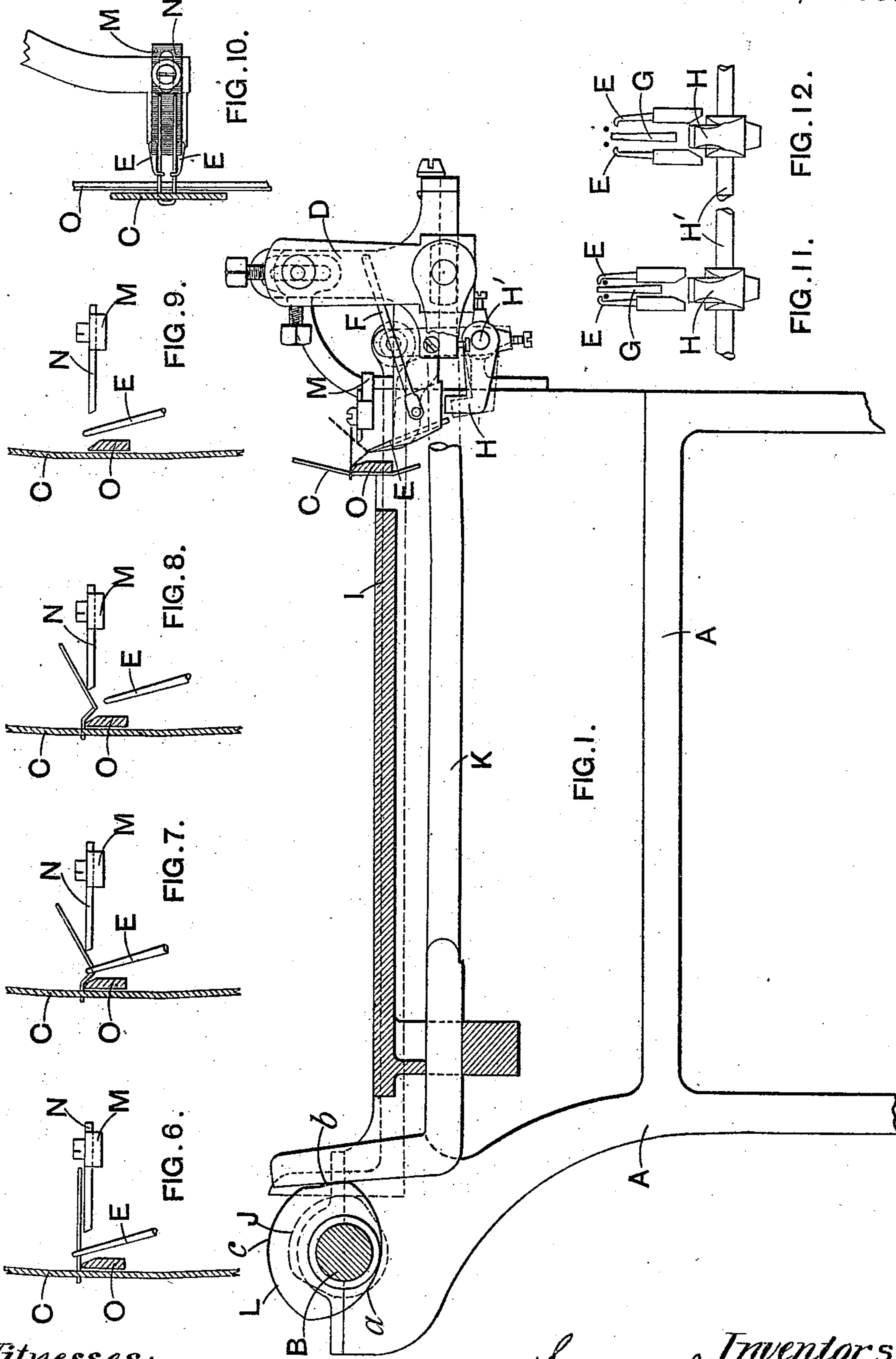
(No Model.)

2 Sheets—Sheet 1.

S. & E. BEAUMONT.  
CARD SETTING MACHINE.

No. 551,612.

Patented Dec. 17, 1895.



Witnesses:  
Frank S. Ober  
C. V. Edwards.

Inventors  
Samuel Beaumont  
Ernest Beaumont—  
by *Wm. A. Rosenthal*  
Att'y.

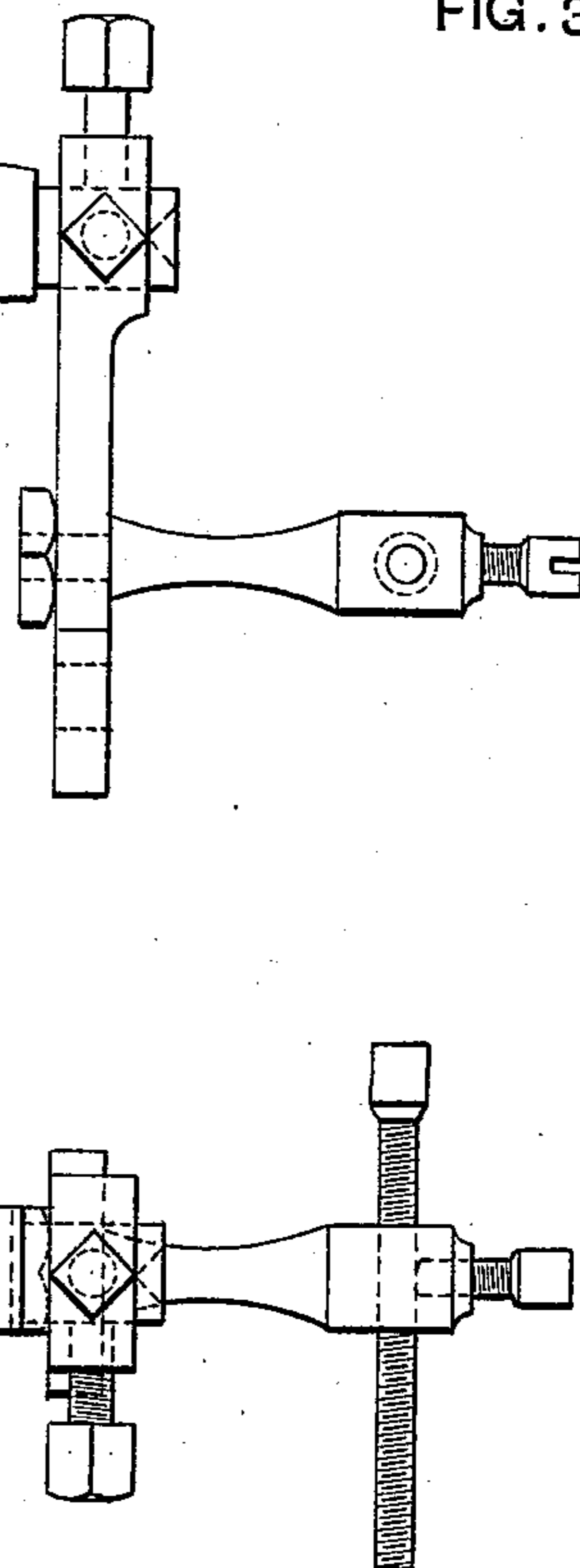
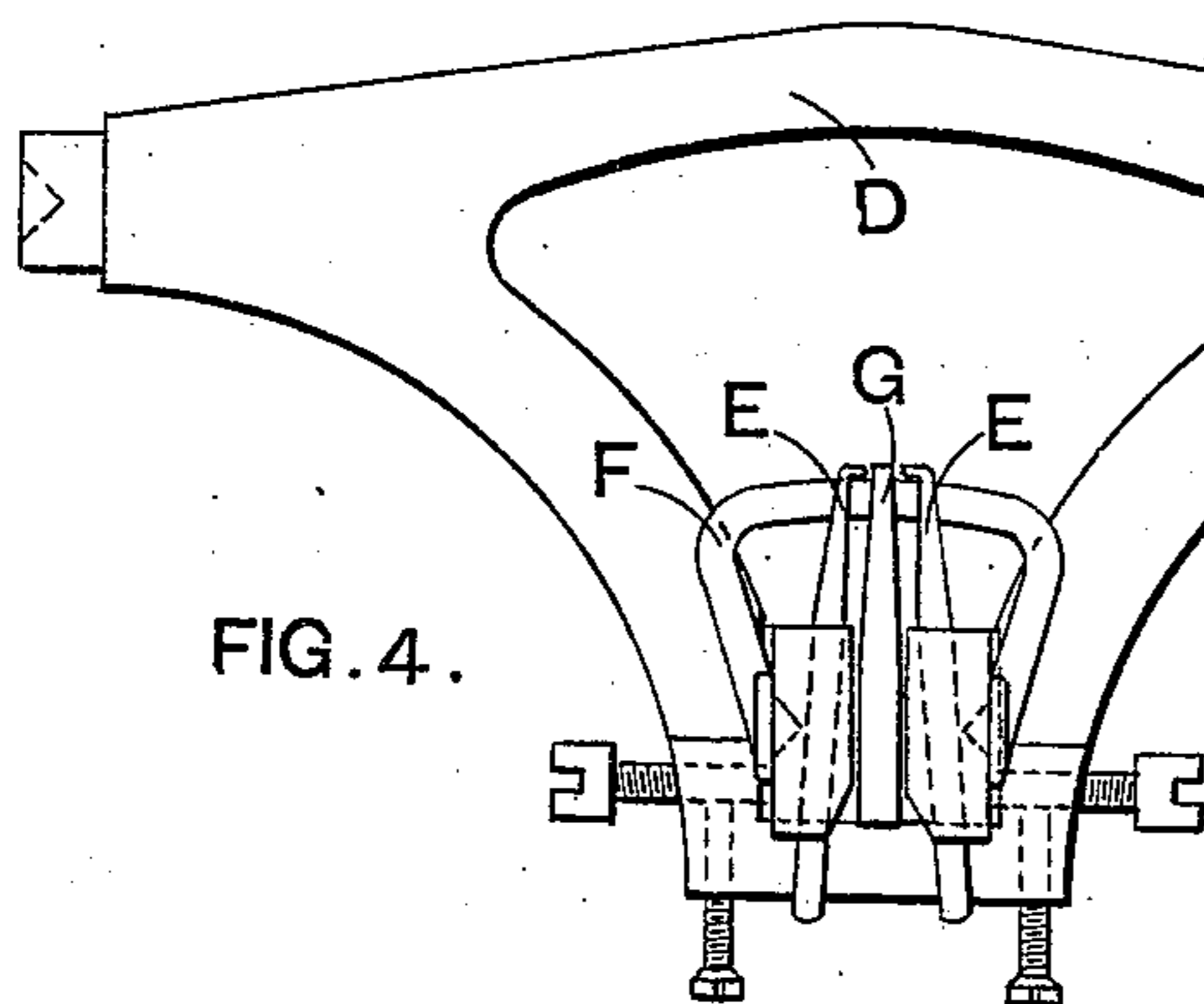
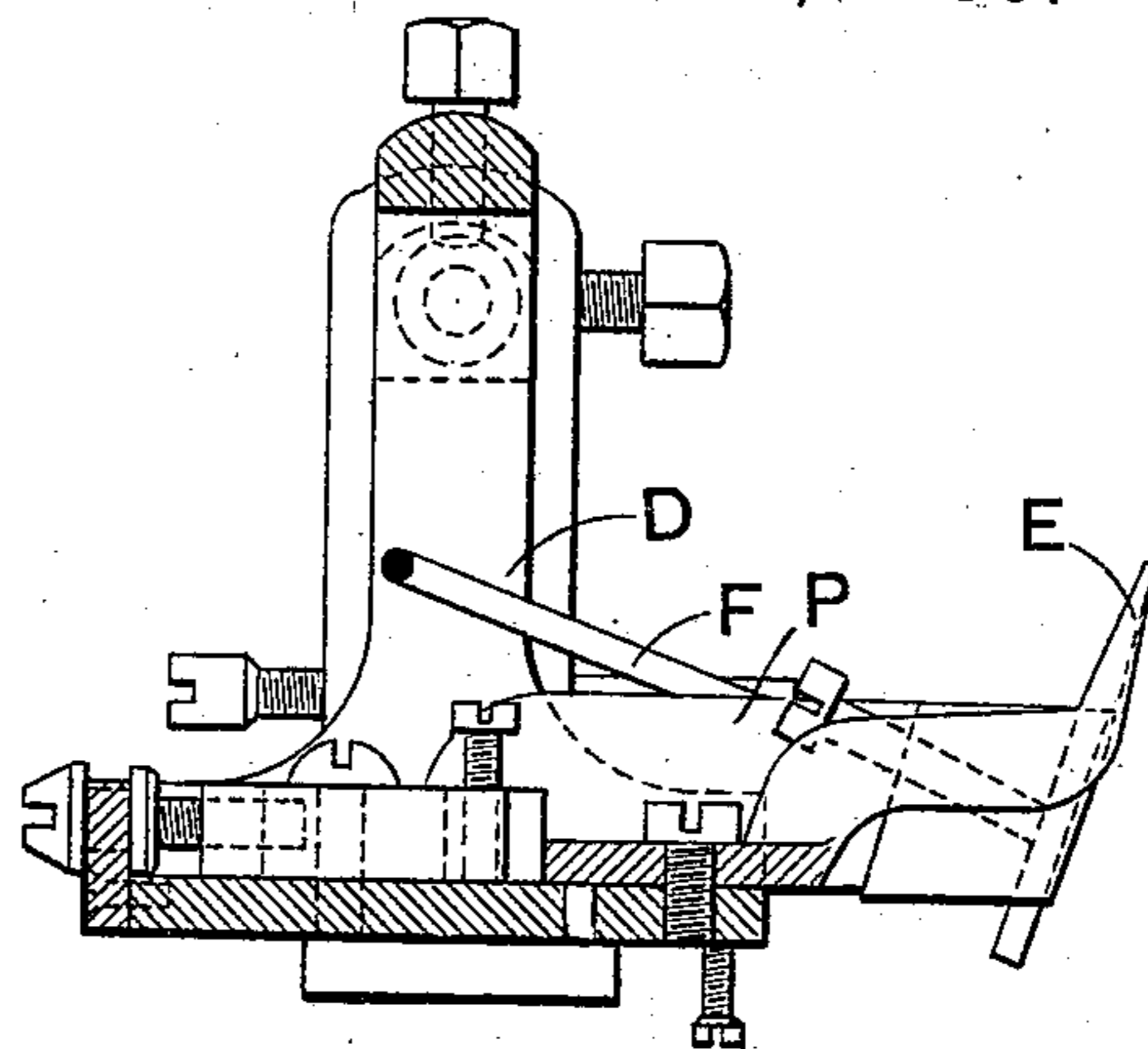
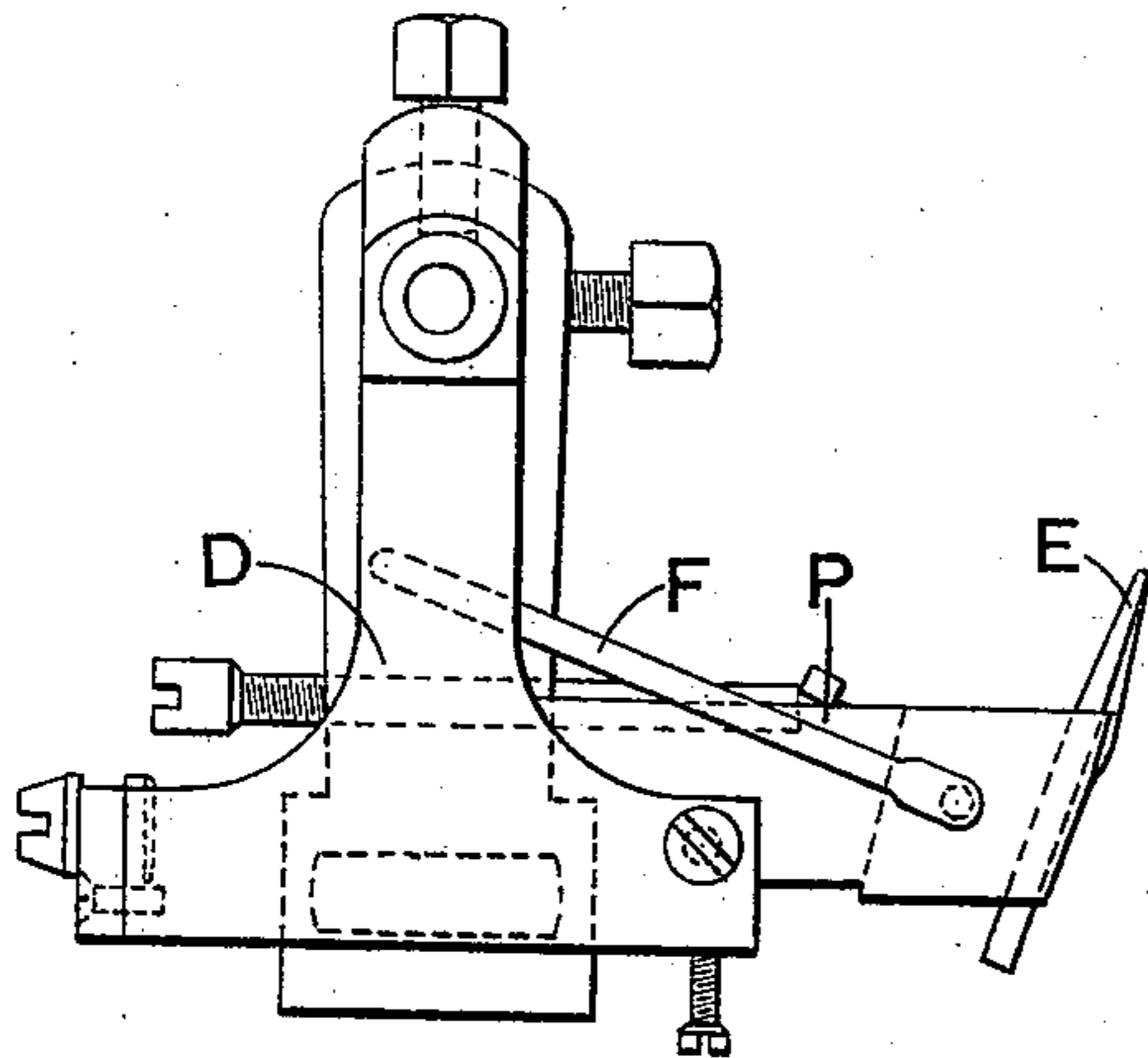
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2 Sheets—Sheet 2.

S. & E. BEAUMONT.  
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Patented Dec. 17, 1895.



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# UNITED STATES PATENT OFFICE.

SAMUEL BEAUMONT AND ERNEST BEAUMONT, OF MANCHESTER, ENGLAND.

## CARD-SETTING MACHINE.

**SPECIFICATION** forming part of Letters Patent No. 551,612, dated December 17, 1895.

Application filed March 5, 1894. Serial No. 502,351. (No model.) Patented in England February 3, 1894, No. 2,364, and February 5, 1894, No. 2,465; in Germany February 5, 1894, No. 77,739; in France February 15, 1894, No. 236,304, and in Belgium February 15, 1894, No. 108,573.

*To all whom it may concern:*

Be it known that we, SAMUEL BEAUMONT and ERNEST BEAUMONT, citizens of the United Kingdom of Great Britain and Ireland, residing at Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Card-Setting Machines, of which the following is a specification.

This invention was patented in Great Britain February 3, 1894, No. 2,364, and on February 5, 1894, No. 2,465; in Germany February 5, 1894, No. 77,739; in France February 15, 1894, No. 236,304, and in Belgium February 15, 1894, No. 108,573.

This invention relates to machines for setting the dents or teeth of wire cards, and its object is to provide more certain, accurate and simple means for producing two bends in each limb of each dent, as is already sometimes done, instead of the single bend more commonly produced.

In a machine constructed according to these improvements we may employ the ordinary mechanisms for cutting the wire, producing the crown, inserting the dent into the foundation, and producing the first bend. To produce the second bend, we arrange to receive the ends of the dent, after they have been inserted through the foundation and beyond the back-head, upon an adjustable plate or support between which and the back head they pass through the hooks of the crookers. Upon the descent of the crookers, in the manner hereinafter described, the bend nearer to the foundation is formed upon the back head and the second bend by the crookers, at a point intermediate between the back head and the adjustable plate upon which the ends of the dents are detained. The liberation of the dent from the crookers is effected by means of a vertically-moving truncated wedge or cone which enters between the crookers and forces them apart. The crookers are returned by a spring to their original position and the cycle of motions is repeated after the foundation has been moved by the usual means into the position for the insertion of the next dent.

We will more particularly describe our said invention with reference to the accompanying drawings, in which—

Figure 1 is a side elevation showing the general arrangement, portions being shown in section. Fig. 2 is a side view of the swing-frame in which the crookers are carried. Fig. 3 is a vertical longitudinal section taken between the crookers. Fig. 4 is an end view of the swing-frame. Fig. 5 is a plan of the same. Figs. 6 to 9 inclusive are detail views of the crookers and the dent, showing their various positions as the swing-frame is moved. Fig. 10 is a detail of the adjustable blade, and Figs. 11 and 12 are details of the crookers and the wedge for separating the same.

A is the frame side of an ordinary card-setting machine. B is the driving-shaft, and C the sheet or fillet foundation in which the dents are to be set.

The swing-frame D is pivoted to its brackets in the usual manner; but the crookers are constructed and arranged to be mechanically separated at the proper moment and to be thereafter closed together by the bow-spring F or by an equivalent spring or springs. Between the crookers there is arranged a gage-piece G, maintaining a position constant with respect to the crookers, the function of which gage-piece is to prevent the limbs of the dents being drawn together.

Perpendicularly under the gage-piece G there is arranged a truncated wedge or cone H, which has vertical oscillating or reciprocal motion imparted to it. This wedge may be carried on a vertically-reciprocating slide but it is preferred to mount it; as shown by Fig. 1, upon a rocking shaft H', which is oscillated at the proper moment by the cranked rod I and the tappet J on the driving-shaft.

The swing-frame D is oscillated by the cranked rod K and the tappet L, or by two equivalent tappets fixed upon the driving-shaft B. This tappet, or these two tappets, if two be used, differs from the ordinary tappet employed for oscillating the swing-frame, in having two different dwells or heights b and c instead of c only. The cycle of motions commences when the rod K is opposite to the

center part of the curve *a* of the tappet. In this position the crookers are at the highest part of their stroke and the limbs of the dent are inserted through the foundation C and the hooks of the crookers, as shown by Fig. 6. The motion of the tappet then forces the crookers down to the position shown by Fig. 7, when the dwell *b* comes into contact with the rod K and the motion of the crookers ceases momentarily while the wedge H is moved up to the position shown by Fig. 12 from its normal position. (Shown by Fig. 11.) The motion of the tappet continuing, its higher part *c* forces the crookers farther down into the position shown by Figs. 8 and 12, when they are fully separated by the entrance between them of the wedge H, and the two limbs of the dent are thereby freed. The remainder of the tappet is shaped in the usual manner to restore the crookers to their original position, Fig. 9, whereupon the cycle of motions is repeated. The upper ends of the crookers, instead of being hooked in the usual manner, are simply turned inward at right angles, so that they readily slide off the limbs of the dent when they are separated by the wedge.

A bracket or arm M is secured upon the machine-frame side in such a position that the adjustable blade N may be fixed thereon, behind the crookers and the back head O, as separately shown in plan by Fig. 10, so that the limbs of the dent, after they have been inserted through the foundation, come over the upper face of the blade N, upon which they are detained while the bends are being made.

During the descent of the crookers, as hereinbefore described, they draw down the limbs of the dent between the back head and the blade N, thus producing a second bend, as shown by Figs. 7 and 8, simultaneously with and in addition to the first or ordinary bend produced upon the back head.

The crookers are separated, as hereinbefore described, for the liberation of the dent, because the second bend prevents their liberation in the ordinary manner. For this purpose we may make the central parts P of the crooker-slides of flat spring-steel to give them flexibility, and they may be forced together again by the bow-spring F after the withdrawal of the wedge; but this construction may be variously modified to produce a like result.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a card setting machine, the combination with the back-head, of a pair of crookers having right angled ends, normally held together, and a wedge adapted to be introduced

between said crookers to separate the same after each stroke, substantially as described.

2. In a card setting machine, the combination of a pair of separable crookers, a wedge arranged to enter between and open the same, and a spring or springs adapted to close said crookers after the withdrawal of the wedge, substantially as described.

3. In a card setting machine, the combination with the back-head, of separable crookers, and a gage piece maintaining a position constant with respect to said crookers, between the same, to prevent the limbs of the dent being drawn together, substantially as described.

4. In a card setting machine, the combination and arrangement with the back-head, of an adjustable blade between which and the back-head the crookers are introduced, substantially as described.

5. In a card setting machine, the combination of a swing frame carrying separable crookers, means for normally holding said crookers together, and a reciprocating wedge adapted to be introduced between said crookers to separate the same, substantially as described.

6. In a card setting machine, the combination of a swing frame carrying separable crookers and a gage piece maintaining a position constant with respect to said crookers, means for normally holding said crookers together, and a reciprocating wedge adapted to be introduced between said crookers to separate the same, substantially as described.

7. In a card setting machine, the combination of a swing frame carrying a pair of separable crookers having right angled ends, means to hold the ends of each pair of crookers normally together, a back-head, and a blade fixed adjacent thereto, and a wedge adapted to enter between and separate said crookers, substantially as and for the purpose set forth.

8. In a card setting machine, a two-dwell tappet or tappets on the driving shaft, a rod connecting the tappet with the swing frame, an adjustable blade at the back of the crookers, a wedge to separate the crookers for the liberation of the dent, and a spring or springs to close the crookers, constructed, arranged and operating substantially as described.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 22d day of January, 1894.

SAMUEL BEAUMONT.  
ERNEST BEAUMONT.

Witnesses:

WILLIAM GEO. HEYS,  
GEORGE W. ROWE.