

(No Model.)

4 Sheets—Sheet 1.

H. S. AYRES.
PLAITING DEVICE FOR SEWING MACHINES.

No. 595,033.

Patented Dec. 7, 1897.

Fig. 1

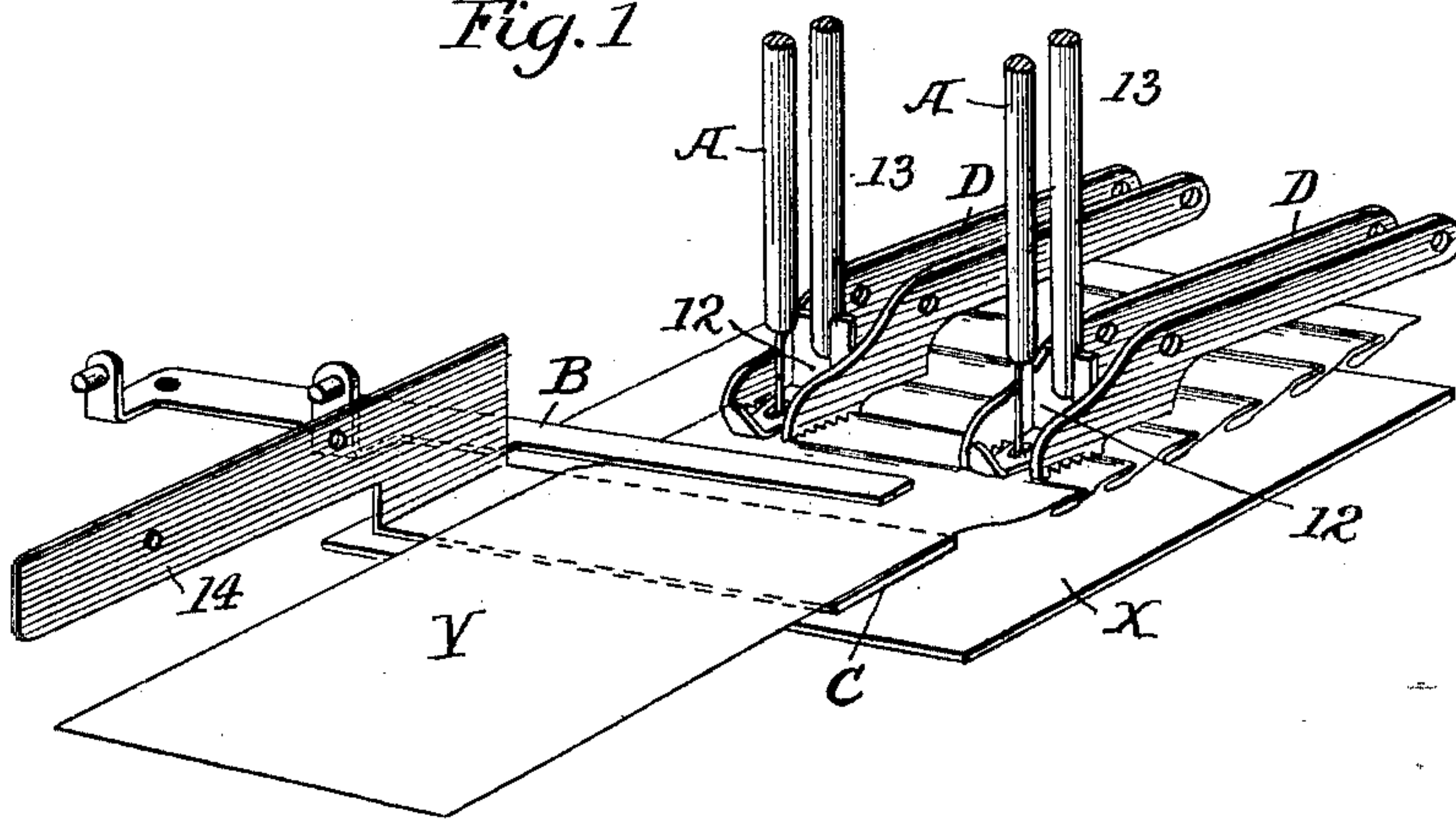


Fig. 2.

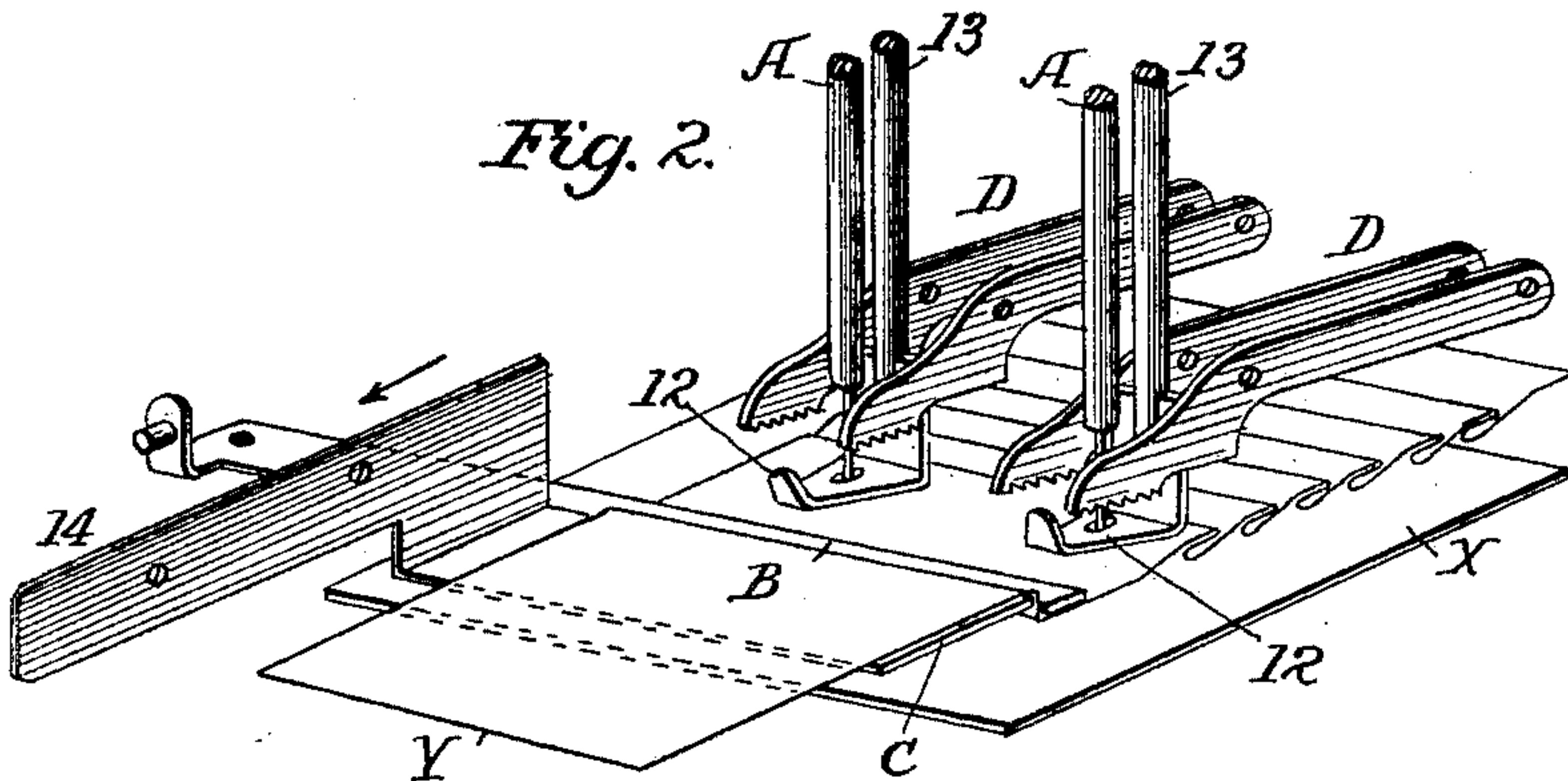
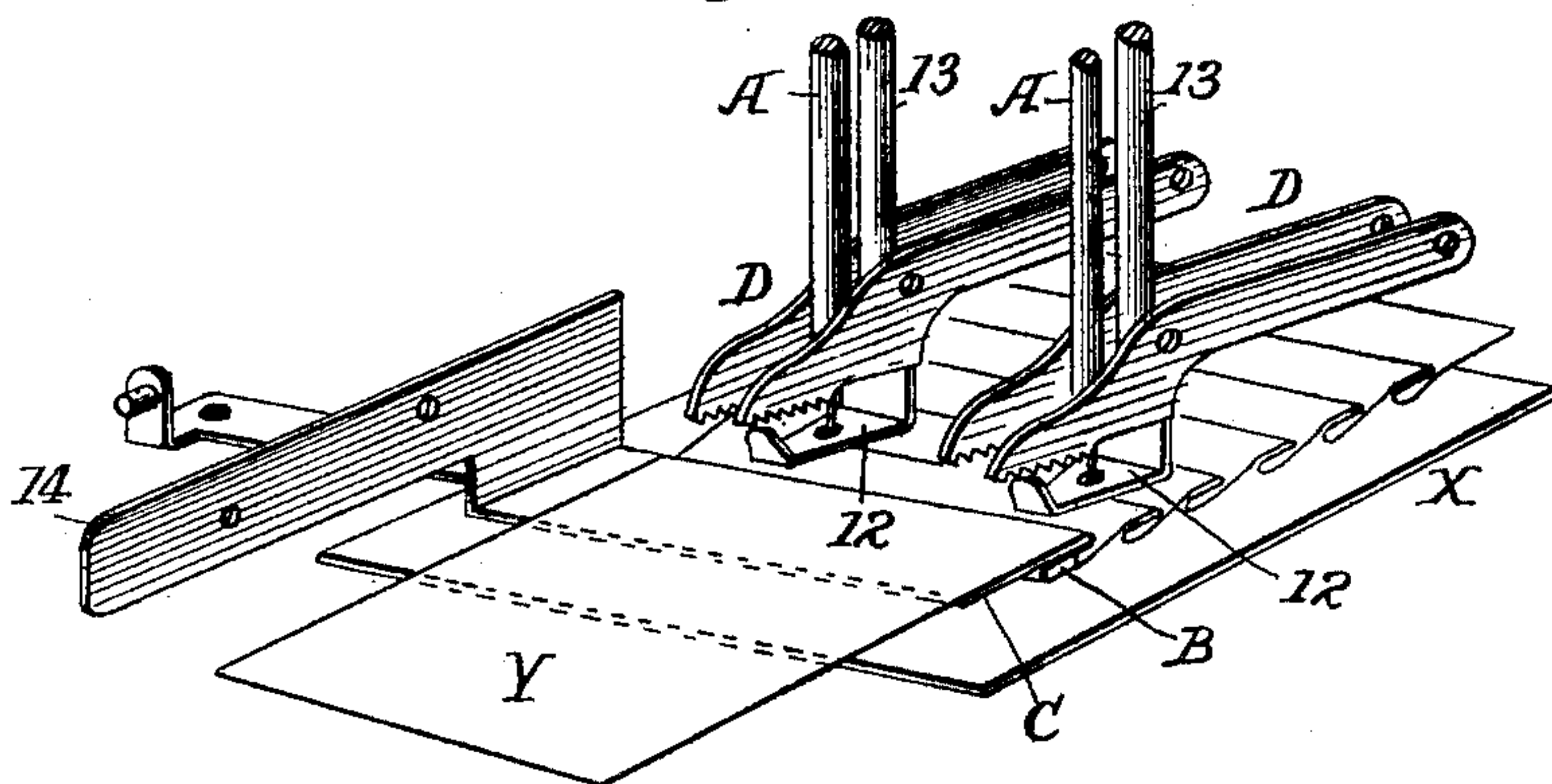


Fig. 3.



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Fig. 4.

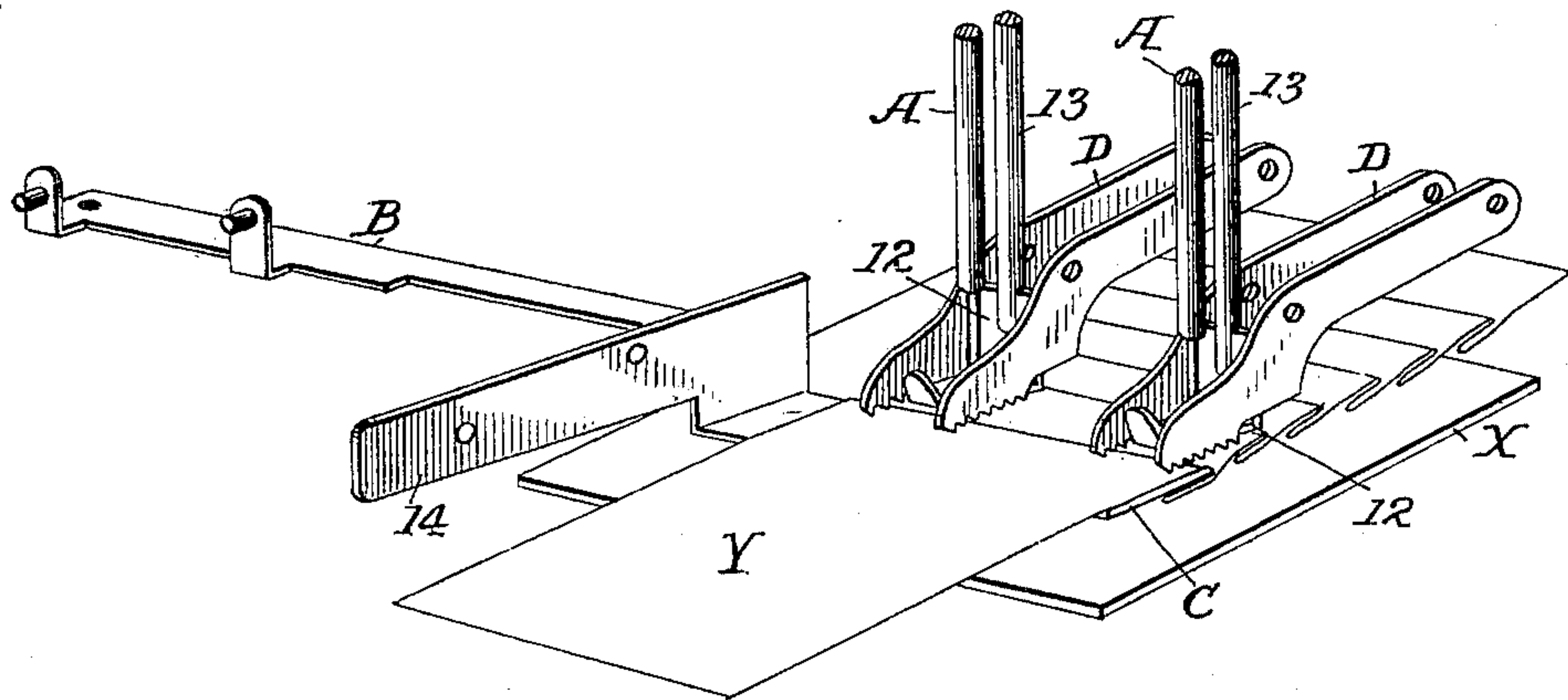


Fig. 5.

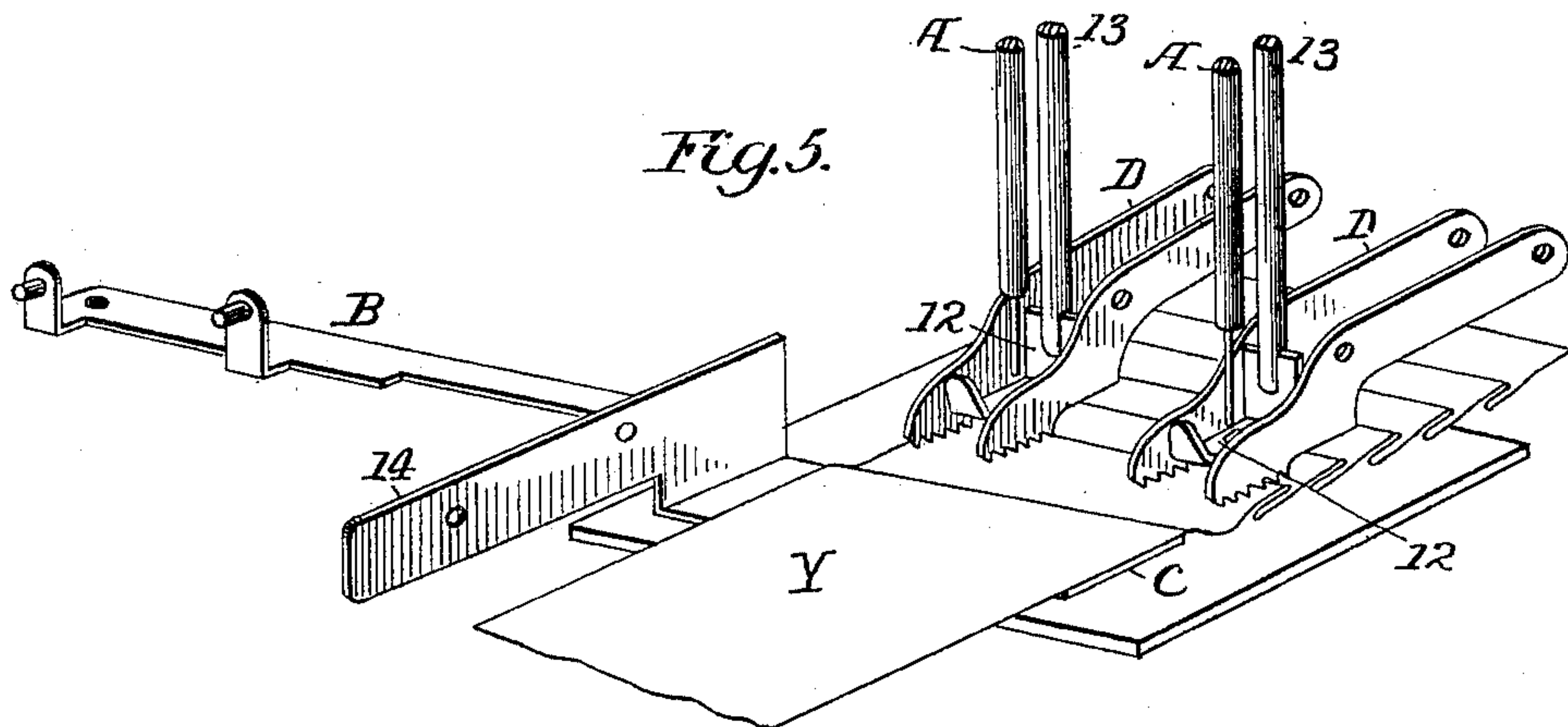
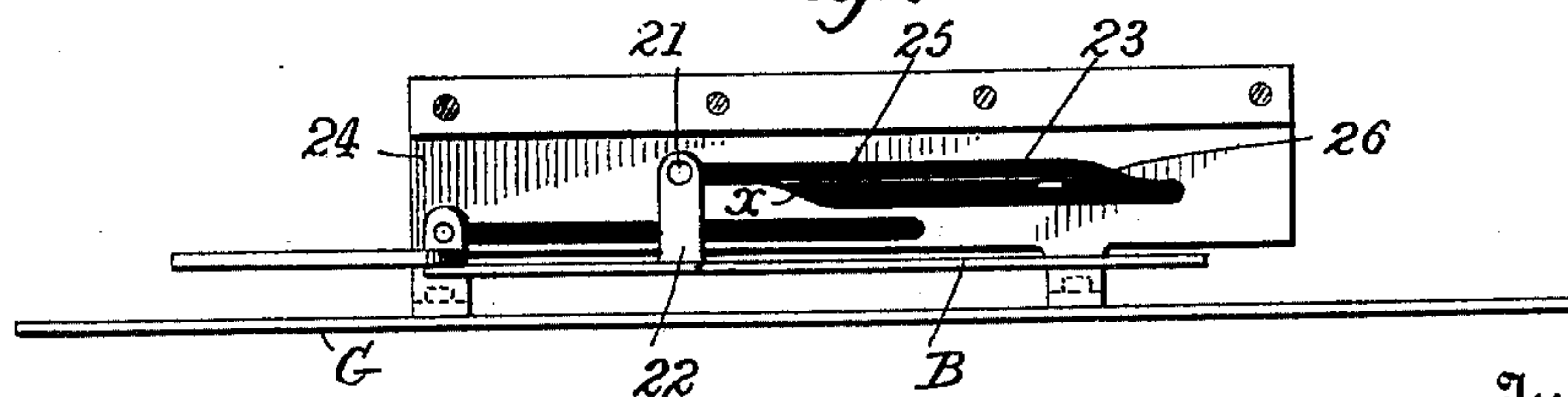


Fig. 6.



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4 Sheets—Sheet 3.

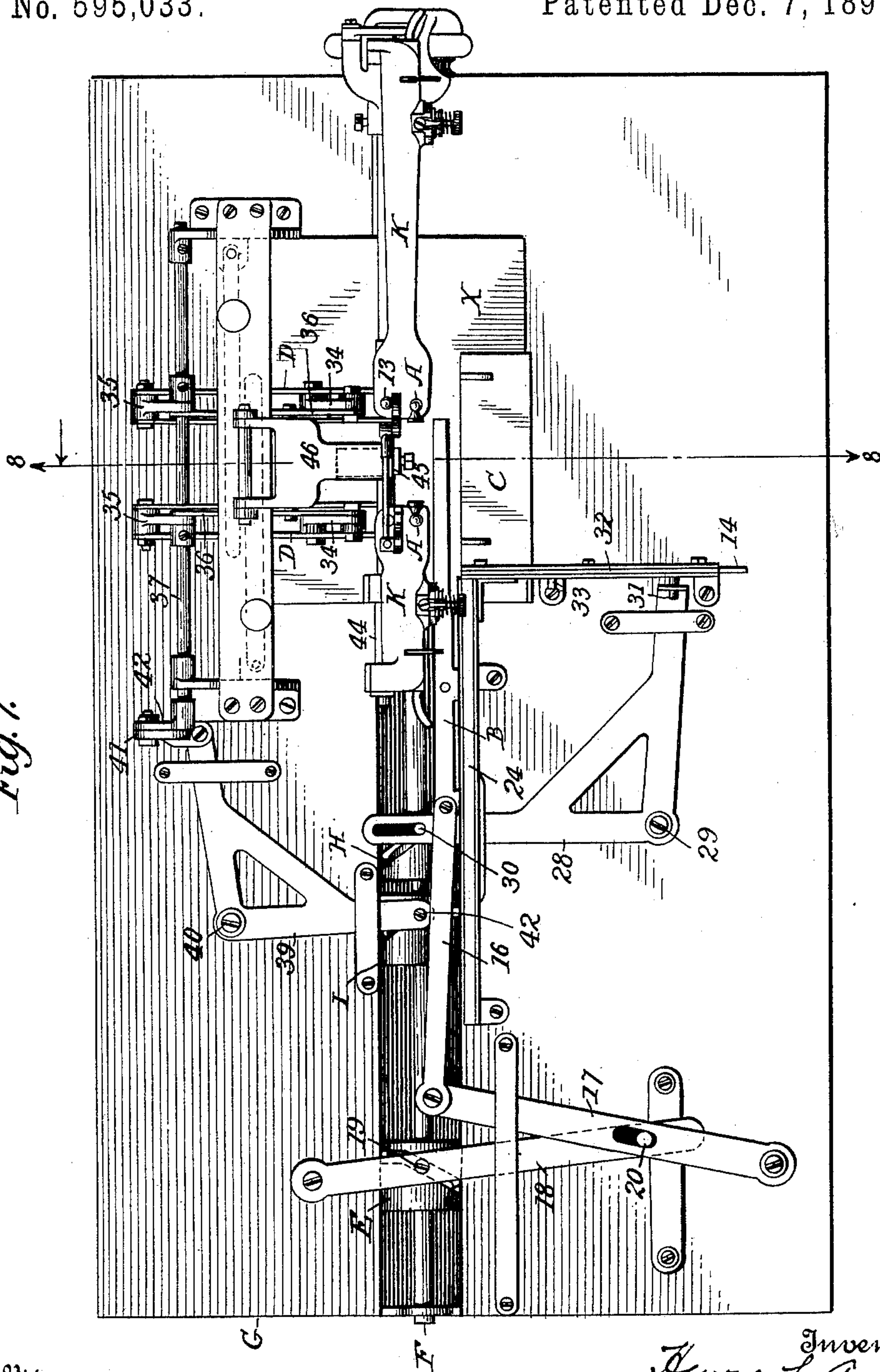
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Fig. 7.



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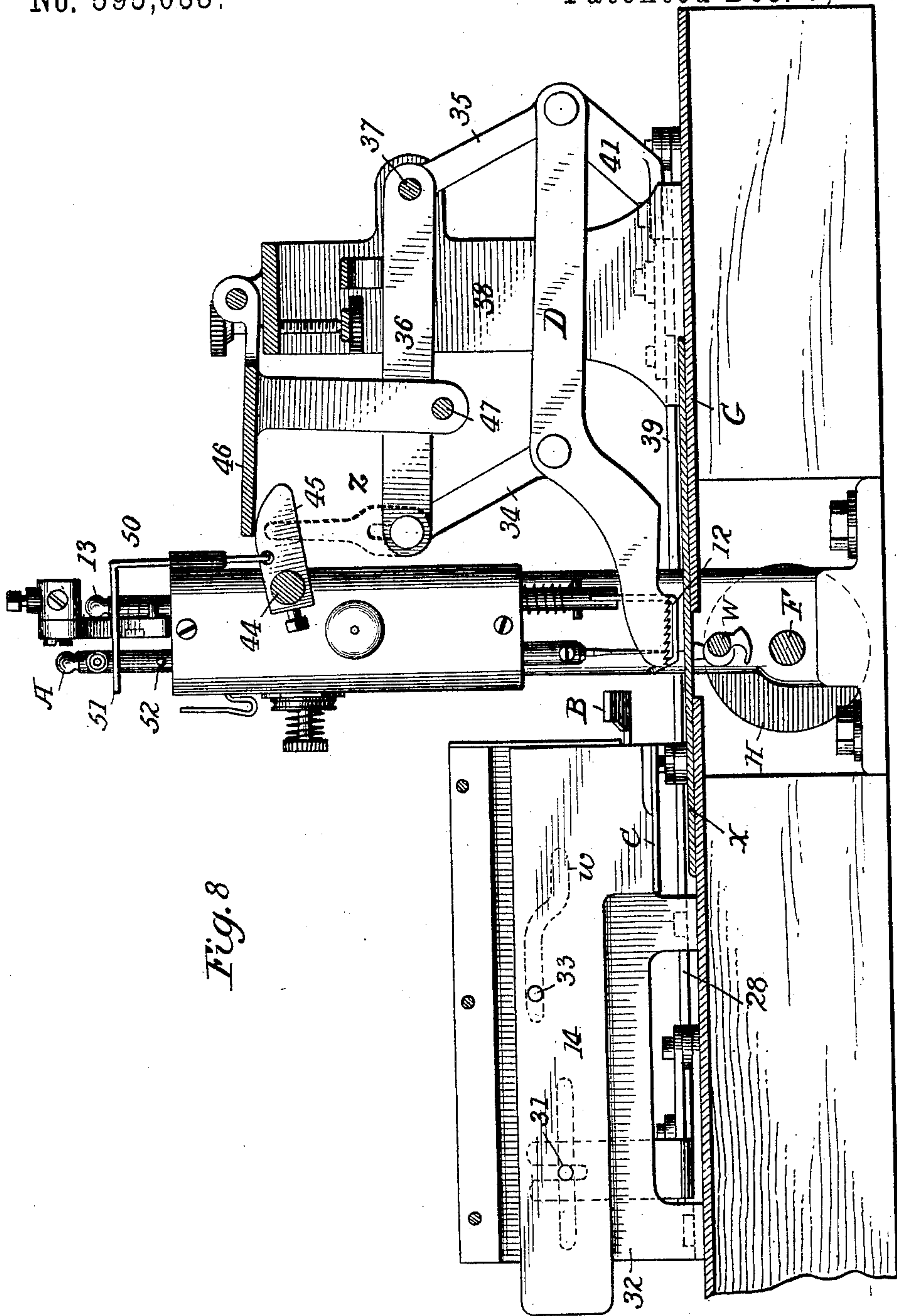


Fig. 8

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UNITED STATES PATENT OFFICE.

HENRY S. AYRES, OF MCGRAWVILLE, NEW YORK, ASSIGNOR TO ALBERT P. MCGRAW, OF SAME PLACE.

PLAITING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 595,033, dated December 7, 1897.

Application filed February 8, 1897. Serial No. 622,529. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. AYRES, a citizen of the United States, residing at McGrawville, in the county of Cortland and State of New York, have invented certain new and useful Improvements in Plaiters, of which the following is a specification.

My invention has for its object to fold a strip of fabric into plaits and when necessary to sew the folds as they are formed; and to this end my invention consists of mechanism constructed as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figures 1 to 5 are perspective views showing devices for folding, plaiting, and sewing a strip disconnected from the other parts. Fig. 6 is a detached view illustrating the parts employed in connection with the upper feed-plate for imparting the proper up-and-down movements thereto. Fig. 7 is a plan view of the entire machine; and Fig. 8 is an enlarged transverse section on the line 8 8, Fig. 1.

Before describing the details of construction of my machine I will set forth the operation of the main parts, as illustrated in the detached perspective views, Figs. 1 to 5. In these views X is the work-plate, Y the strip of fabric to be plaited and sewed, and A A are the parallel needle-bars of two machines so arranged that the work will be fed in the direction of the arrow beneath the presser-feet 12 12 at the ends of presser-bars 13.

There are two folder-blades B C, and at the beginning of operations the wide blade C lies on the work-plate X and extends across and below the fabric Y, the narrow blade B being carried backward to its farthest point. The first movement is upon the part of the narrow blade B, which moves forward and down upon the fabric, as shown in Fig. 2. The folder-blade C then moves forward over the blade B, forming a fold in the fabric, as shown in Fig. 3, after which the blade B moves back entirely away from the fabric. The feeding-claws D of each sewing-machine are lifted, as shown in Fig. 3, and moved backward at the same time that the blade C moves forward and descends upon the fabric after the blade B has withdrawn from the fabric. The blade C is brought back to its first position

while the feed-claws carry the fabric underneath the needles, after which these operations are repeated, folding the fabric into successive plaits, which are carried beneath the presser-feet and sewed by means of the needles. With these devices, including any suitable kind of feed devices, are combined any suitable appliances for imparting to the different parts their proper motions. Such appliances as I have found to be effective are shown in the remaining figures of the drawings. The reciprocating motion of the folder-blade B is imparted by means of a connecting-link 16 and lever 17 from a lever 18, having a pin 19, which extends into a slot in a cam E on a shaft F, another pin 20 extending from the lever 18 into a slot in the lever 17. The up-and-down movement of the blade B is imparted by the movement of a pin 21, extending from an arm 22, projecting from the blade B into a slot 23 in a vertical plate 24, secured to the base-plate G of the machine. The slot 23 has oppositely-inclined edges and a flat spring-blade 25, secured at one end 26, so that when the pin 21 moves backward at the bottom of the slot and up the edge *x* the blade will yield to permit it to pass above it, and then when the pin 21 moves in the opposite direction it will pass quite over the top of the spring-blade and down to the bottom of the slot.

The movements of the needle-bars are imparted from a cam upon the shaft F (not shown) and other mechanism so well known that it is not necessary to describe the same, and the needles are supplied with thread from spools and through ordinary tension devices not necessary to be described.

The back-and-forth movements of the blade C are imparted from a lever 28, pivoted at 29 to the base-plate G, and having a pin 30 extending into a cam H upon the shaft F. A pin 31 extends from the flange 14 of the blade C through a slot in a vertical plate 32 into a slot in the upturned end of the lever 28, as shown in dotted lines, Fig. 8. A pin 33 extends from the flange 14 into a slot *w* in the plate 32, which slot has an upper and lower horizontal and an inclined portion, so that the flange and plate travel first in a horizontal direction and then descend and then travel

horizontally at a lower level, these movements being reversed as the plate is drawn back.

The feeding-claws D are pivoted at their rear ends to arms 35 on a rock-shaft 37, turning in bearings on standards 38, and the claws are suspended by links 34 at their forward ends from an arm 36, swinging on shaft 37. The shaft 37 is rocked to carry the feeding-claws back and forth by means of a lever 39, pivoted at 40 to the bed-plate and connected by a link 41 to an arm 42 upon the shaft 37. The lever 39 is reciprocated by means of a cam I, having a groove receiving a pin 42 extending from the end of the lever 39.

The up-and-down movements of the feed-claws D are imparted from a rock-shaft 44, having an arm 45, which raises and lowers a bell-crank lever 46, from one arm of which a pin 47 extends below the arm 36, so as to lift the latter as the bell-crank lever rises and falls. Instead of the lever 46 the end of the arm 36 might be connected by a link ε (dotted lines, Fig. 8) to the arm 45. The arm 45 is rocked in any suitable manner, either by the rocking of the shaft 44 or otherwise. As shown, a rod 50, attached to the arm 45, has a bent end 51, which makes contact with a pin 52 on the needle-bar and is lifted thereby when the needle-bar rises.

If desired, in addition to the upper feeding-claws, there may be a lower feed device W, Fig. 8, of any suitable construction.

It will be evident that the two sewing-machines K K may be mounted adjustably upon the base-plate G, so as to be separated or brought together, and that the feed claws or devices D may also be mounted adjustably upon the shaft 37 to accommodate the parts to different widths of fabric. It will also be evident that by varying the throw of the blade B, which can be done by adjusting the pin 20 in a slot in the arm or lever, folds of different lengths may be formed. By increasing or diminishing the throw of the blade C it will be evident that folds of different widths may be made. It will be obvious, too, that while means are shown and described for moving this blade B across the fabric strip as well as for lowering it upon the strip the lowering means for the blade may, in some instances, be dispensed with, in which case the blade would be disposed to move longitudinally across the fabric in a plane either wholly above or wholly below that in which the blade C reciprocates. It will also be evident that in some instances but a single line of stitching may be made in the ruffle.

Without limiting myself to the precise details of construction shown and described, what I claim is—

1. The combination of feed devices and two blades adapted to receive a fabric between them, means for reciprocating one of the

blades transversely to the line of feed, and means for reciprocating the other blade in the line of feed to bring it upon the first-mentioned blade, substantially as described.

2. In a machine for folding fabrics, the combination of feed devices and two blades adapted to receive a strip between them, means for moving one blade back and forth upon the second blade in the direction of the line of feed, and means for raising and lowering the second blade and for reciprocating it longitudinally in a direction transverse to that in which the first blade moves, substantially as described.

3. In a machine for forming successive folds in a fabric strip, the combination of two blades adapted to receive a strip between them, means for moving one blade back and forth upon the second blade, devices for reciprocating the second blade in a direction transverse to that in which the first blade moves and means for holding the folds after they are formed, substantially as described.

4. In a machine for forming successive folds in a fabric strip, the combination with strip-feeding devices, of a blade, means for folding the strip around the blade, and means for reciprocating the blade transversely to the direction in which the strip is fed, substantially as described.

5. In a machine for folding fabrics, the combination of two blades adapted to receive a strip between them, means for reciprocating one blade back and forth upon the second blade, devices for varying the extent of such reciprocation, and means for reciprocating the second blade in a direction transverse to that in which the first blade is reciprocated, substantially as described.

6. In a machine for folding fabrics, the combination with strip-feeding mechanism, of two blades, means for reciprocating them at right angles to each other, and devices for regulating the reciprocation of one of the blades whereby the strip is formed into folds of different widths, substantially as described.

7. In a machine for folding fabrics, the combination of two blades adapted to receive a strip between them, means for reciprocating one blade back and forth upon the second blade, devices for reciprocating the second blade in a direction transverse to that in which the first blade is reciprocated, mechanism for sewing the folded strip, and devices for feeding said strip to the sewing mechanism, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY S. AYRES.

Witnesses:

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