

No. 705,577.

Patented July 29, 1902.

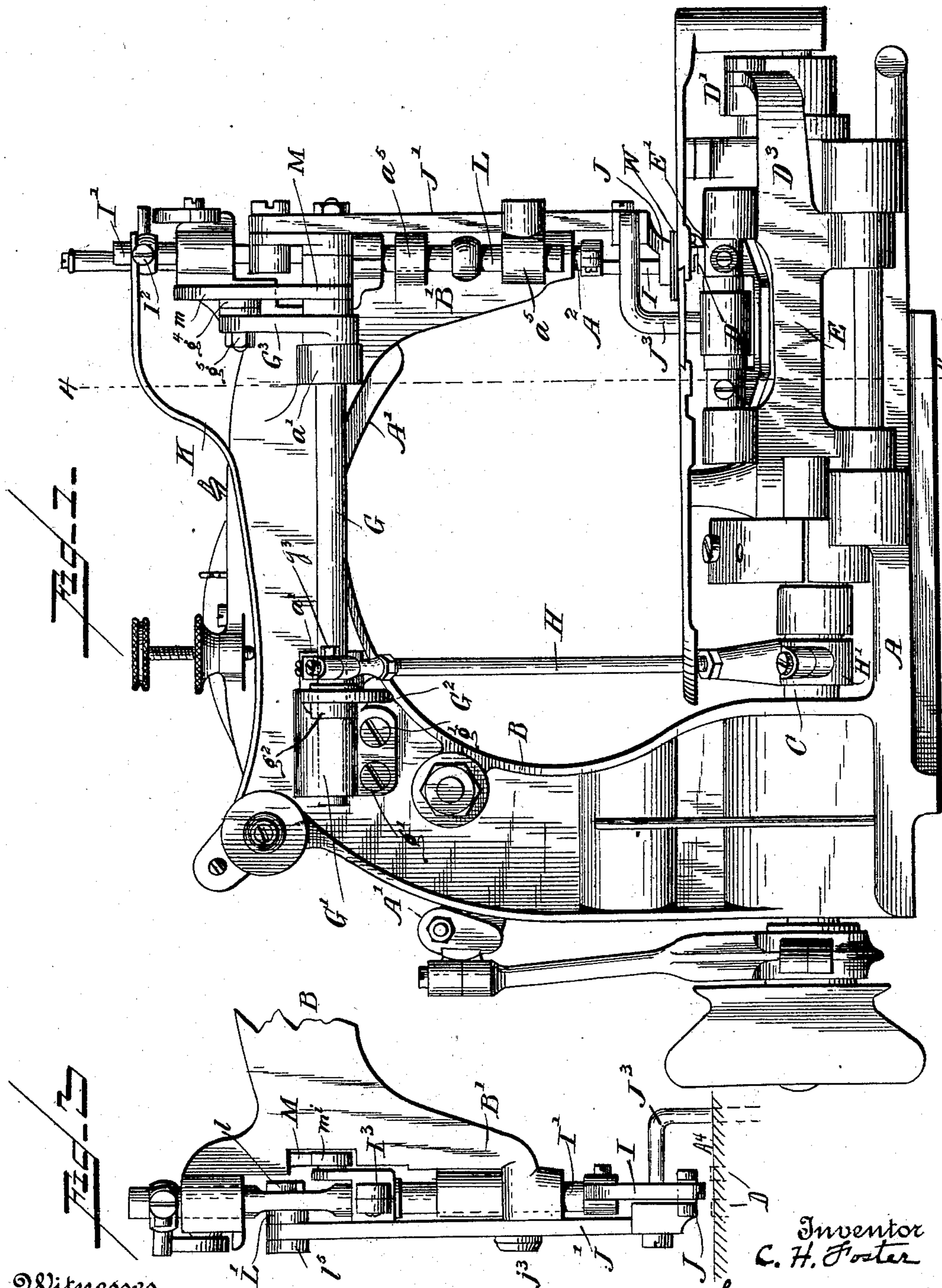
C. H. FOSTER.

FEEDING MECHANISM FOR SEWING MACHINES.

(Application filed Nov. 9, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
Frank L. Ourand..
Albert Popkins.

Inventor
C. H. Foster
by
Sturtevant & Greeley
Attorneys.

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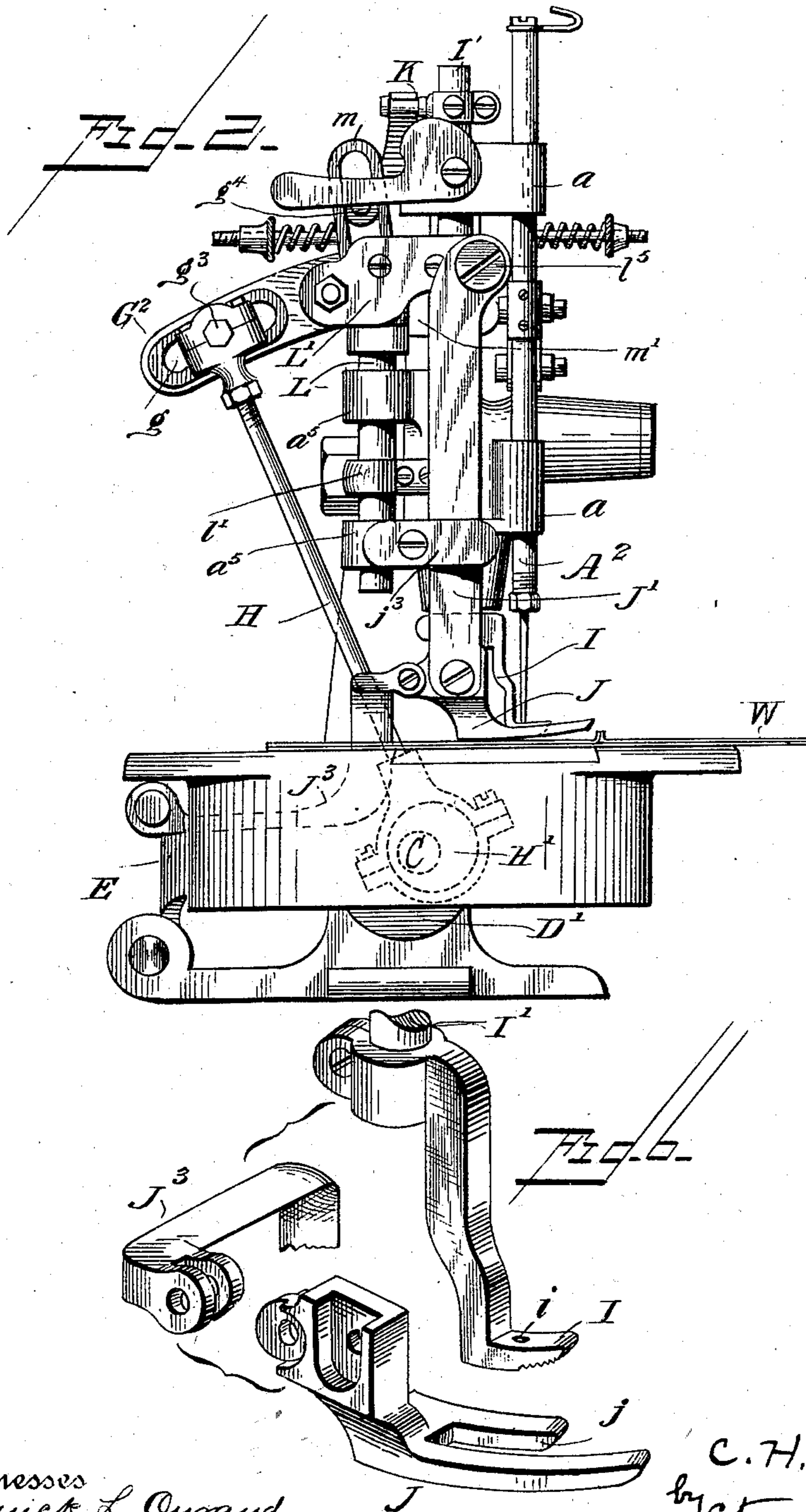
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Witnesses
Frauick L. Ousaud
Albert Popkins

Inventor
C. H. Foster,
by *Sturtevant & Greely*
Attorneys

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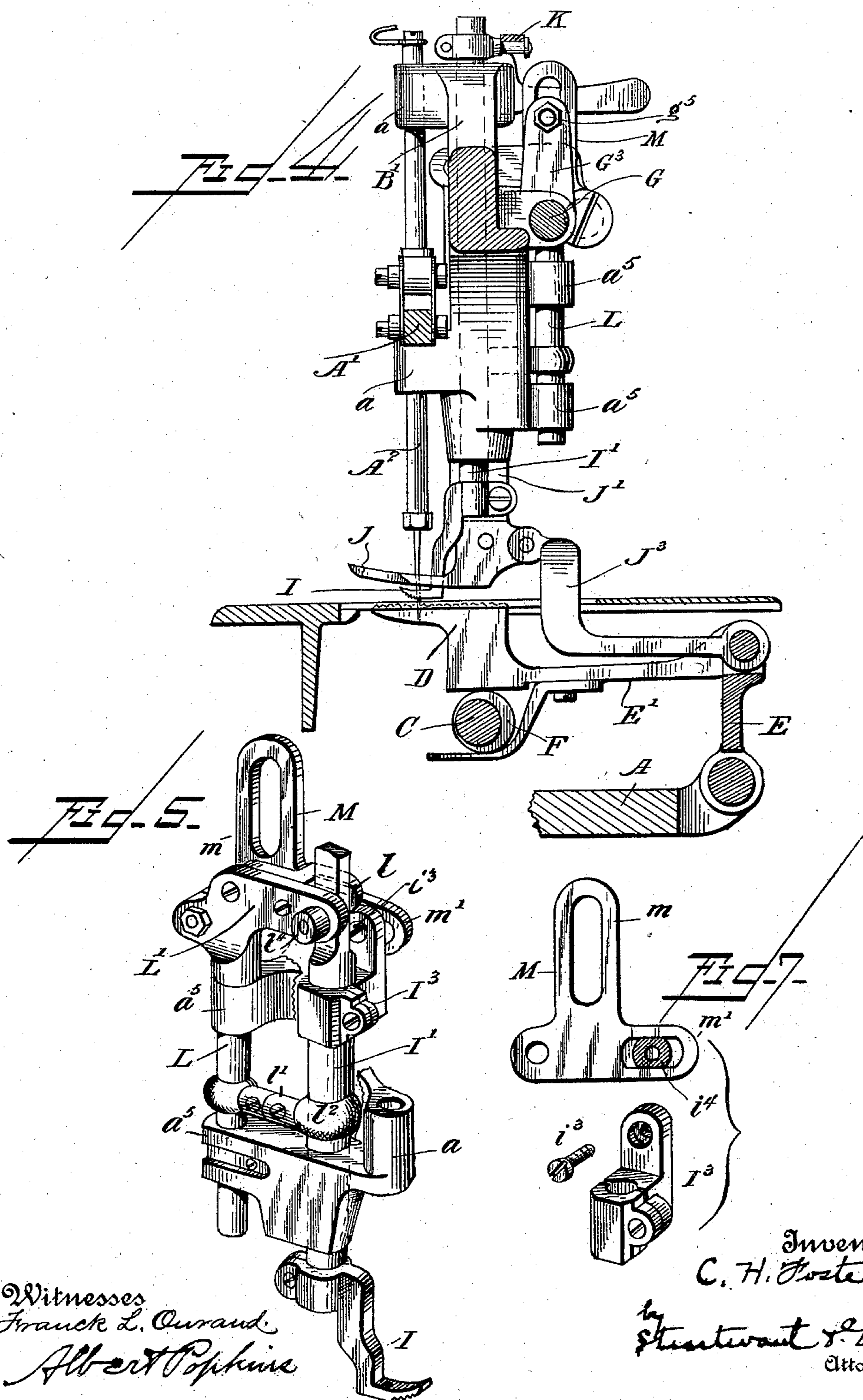
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Witnesses
 Frank L. Ouraud
 Albert Pophine

Inventor
 C. H. Foster

by
 Stewart & Greley
 Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES H. FOSTER, OF NEW YORK, N. Y., ASSIGNOR TO THE UNION SPECIAL SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 705,577, dated July 29, 1902.

Application filed November 9, 1901. Serial No. 81,686. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. FOSTER, a citizen of the United States, residing at New York city, in the county of New York, State of New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings and to the letters of reference marked thereon.

This invention relates to that class of sewing-machines in which are employed two separate and independent presser-feet, one having a four-motion and operating in unison with the feed and the other having vertical movement only and operating at the needle-opening to hold the work on the throat-plate and strip the needle.

The object of the invention is to provide a simple and novel mechanism for actuating the said two presser-feet to allow them to automatically rise and fall upon the entrance of work of varying thickness. This object is accomplished by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a rear elevation of the machine with my improvements applied. Fig. 2 is an end elevation thereof. Fig. 3 is a front elevation of the head of the machine with the needle-bar removed. Fig. 4 is a vertical section on line 4 4, Fig. 1, looking to the right. Fig. 5 is a detail perspective of a portion of the presser-bar-operating mechanism. Fig. 6 shows in perspective the presser-feet and a portion of the lower operating-lever separated, and Fig. 7 is a detail perspective of the bell-crank lever and the connections between it and one of the presser-foot bars separated.

A designates the bed; B, the gooseneck; C, the main shaft, and D the feed-dog mounted on the feed-bar E', receiving its four-motion movement from the cam F' on the main shaft and the rocker E, pivoted at the rear of the bed. The rocker E is provided with an arm D³, which extends around to a stitch-regulating device D' on the end of the main shaft. A' designates the needle-operating arm, and A² is the needle-bar, mounted in guide-lugs

a a on the front of the head B'. All of these parts are substantially identical with what is shown in Patent No. 299,568, granted to Muther & Dearborn June 3, 1884, and need not therefore be further described.

G designates a longitudinal rock-shaft mounted in bearings a' a' on the rear side of the gooseneck and provided at one end with a rearwardly-projecting crank-arm G², secured thereon by means of a split sleeve G', provided with tightening-screws g'. The arm G² is provided with a slot g, in which works a block g², connected by a bolt g³ with the upper end of a connecting-rod or pitman H, the lower end of which is strapped to an eccentric H' on the main shaft C, so that a rocking movement will be imparted to said shaft G from the parallel main shaft.

The presser-foot mechanism comprises a two-motion needle presser-foot I, having a needle-hole i and carried on the lower end of the needle presser-foot bar I, and a four-motion feeding presser-foot J, having a slot or bifurcation j, through which works the presser-foot I, said presser-foot J being carried by the presser-foot bar J' and overlying the upper serrated face of the feed-dog D, while the presser-foot I overlies the upper surface of the throat-plate A⁴ around the needle-hole. Both presser-bars are forced down by a strong spring K, which bears at its free end upon an adjustable pin I² on the upper end of the presser-bar I'.

L designates a vertically-reciprocating shaft, mounted in bearings a⁵ a⁵ on the rear side of the head B' and provided at its upper end with a transverse arm or head L', to the rear end of which is pivoted at its angle the bell-crank lever M, one arm m of which is provided with a slot in which works a block g⁴, carried by a bolt or stud g⁵, secured in the arm G³ of rock-shaft G. The arm L' is provided at its forward end with a forked guide portion l, which straddles the presser-bar I', and just below the fork l the presser-bar I' is provided with an adjustable collar I³, provided with a transverse bolt or screw i³, carrying a block i⁴, which works in the slot of the forwardly-projecting arm m' of the bell-

crank lever M. (See Figs. 5 and 7.) The vertical shaft L is further guided and braced by an arm l' , rigid thereon and provided with an eye l^2 , sliding on the presser-bar I' .

5 The upper end of the presser-bar J' is pivoted on a stud l^4 at the forward end of the arm L' , (see Fig. 5,) on which it is held by a screw l^5 (see Fig. 2) for vertical reciprocation by the shaft L. Forward-and-backward
10 movement is imparted to the presser-bar J' by means of a link J^3 , pivoted at its rear end to the feed rocker-arm E and at its forward end pivoted to the rear end of the presser-foot J. (See Figs. 4 and 6.) The presser-bar J'
15 works near its lower end within a guide arm or bracket j^3 , bolted to the head B' .

The operation is as follows: The feeding presser-foot J being connected to the feed-rocker E will be moved back and forth at
20 identically the same time as the feed-dog D, with which it coöperates, and as the cam F raises said feed-dog so will the feed presser-foot J be depressed to clamp the work W on said dog, and as the feed-dog is lowered the
25 feed presser-foot will be raised to release the work. The four-motion feed presser-foot J therefore first moves toward the feed-dog to clamp the work thereon and then moves rearwardly with the feed-dog to positively carry
30 the work along, the vertical movement of the presser-foot being imparted to it from the shaft G by the arm G' , bell-crank lever M, and vertical shaft L, as before described, and this rearward feed takes place just as the needle
35 leaves the work, while the forward and closing movement is effected during the descent of the needle. The needle presser-foot I is forced down on the goods by its spring just as the other presser-foot leaves the goods
40 and as the needle begins descent, so that the goods will be held firmly upon the throat-plate while the feeding presser-foot is released, and at the moment the needle leaves the goods and the feed is about to begin the
45 presser-foot I will strip the goods from the needle and then be forced upwardly away from the goods by means of the arm m' of bell-crank lever M, one presser-foot being always down upon the goods. The bell-crank
50 lever M is rendered effective on the presser-bar J when the presser-foot I is down firmly on the goods, and said lever is effective on the presser-bar I' when the presser-foot J is forced down on the goods, the said two
55 presser-feet working alternately in opposite directions.

Owing to the sliding connection between the bell-crank lever M and the parts actuated thereby and the use of the strong spring K,
60 the presser-feet will in a machine running at the high speed at which this will be run exert a pounding force on the work and smooth and compress the work very materially, so that a tighter seam may be made than would other-
65 wise be possible.

It will be seen that when two pieces of goods are being sewed together there will be no slipping of one piece upon the other during the feed, as the two pieces will be firmly clamped together.

In adjusting the feed-dog from the regulator D' to regulate the stitch the feed presser-foot J will be simultaneously adjusted, as its throw is also actuated from the same rocker E.

By reason of the sliding connection between the bell-crank lever M and the crank-arm G^3 both presser-feet will be allowed to rise and fall upon the entrance thereunder of work of varying thickness, and the throw of the bell-crank will be correspondingly increased or diminished.

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

1. In a sewing-machine, the combination
85 with the four-motion feed, of a feeding presser-foot opposed to the feed-dog and vibrated from the actuating mechanism thereof, a vertically-reciprocating needle presser-foot to one side of the feed-dog and serving to hold down the
90 work and strip the needle, a vertically-reciprocating shaft parallel with the needle presser-foot bar and to which the upper end of the feeding presser-foot bar is pivoted, a bell-crank lever mounted at the upper end of said
95 reciprocating shaft and pivotally connected with the needle presser-foot bar whereby said presser-foot bars are reciprocated vertically alternately in opposite directions, and mechanism connecting said bell-crank lever with
100 the main shaft of the machine; substantially as described.

2. In a sewing-machine, the combination with the four-motion feed, of a feeding presser-foot opposed to the feed-dog and vibrated from
105 the actuating mechanism thereof, a vertically-reciprocating spring-depressed needle presser-foot to one side of the feed-dog and serving to hold down the work and strip the needle, a vertically-reciprocating shaft parallel with the needle presser-foot bar and to
110 the upper end of which the upper end of the feeding presser-foot bar is pivotally connected to receive its up-and-down motion, a bell-crank lever pivoted at its angle to the upper
115 end of said vertically-reciprocating shaft, a sliding and pivotal connection between one arm of said bell-crank and the needle presser-foot bar, a line-shaft rocked from the main shaft and provided with a crank-arm and a
120 sliding and pivotal connection between said crank-arm and the other arm of the bell-crank lever; substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. FOSTER.

Witnesses:

CHESTER MCNEIL,
FRANCIS S. NORTH.