

Merriam & Crosby,

Splitting Leather,

Fig. 3. N^o 12,392.

Patented Feb. 13, 1855.

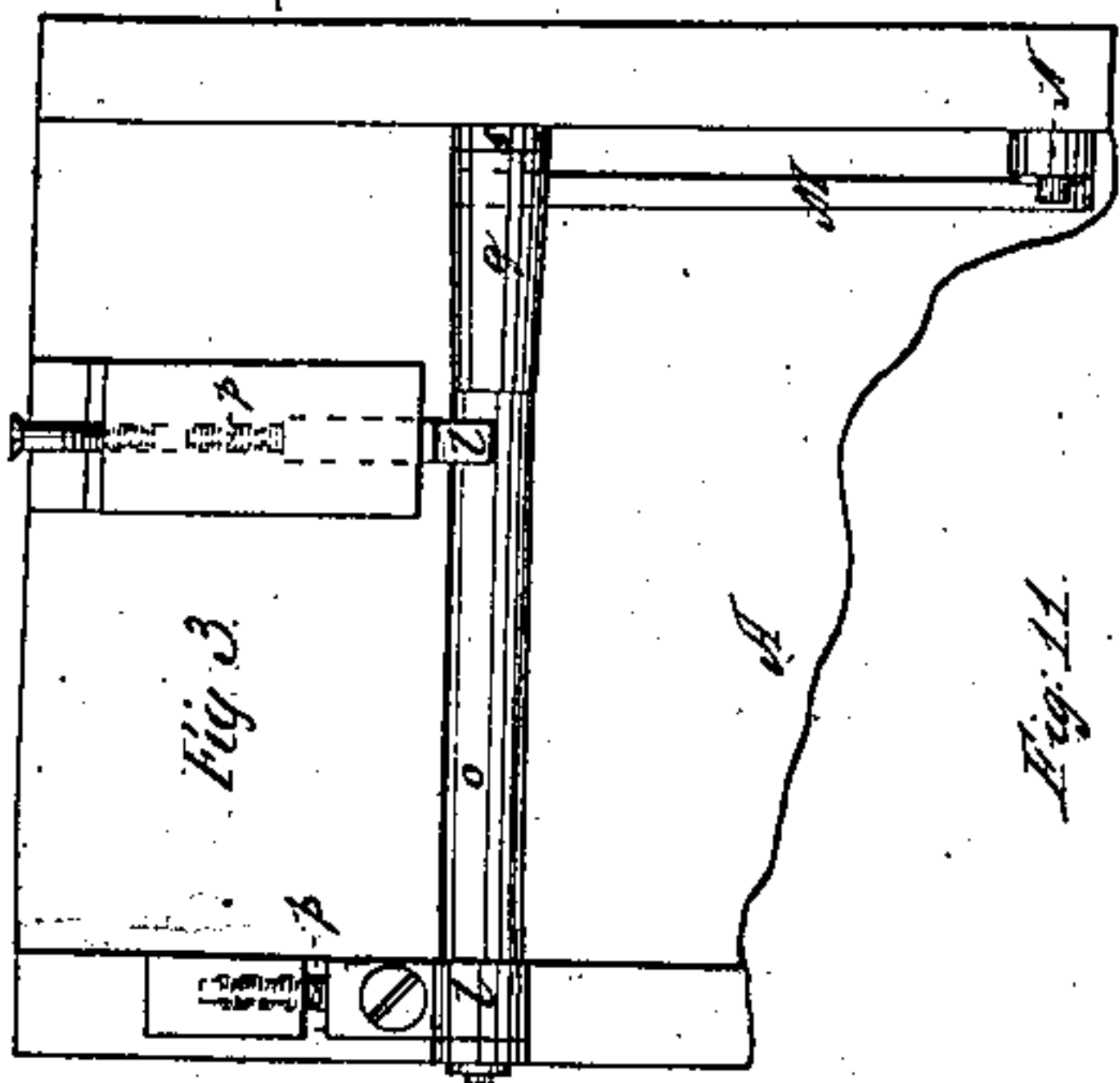
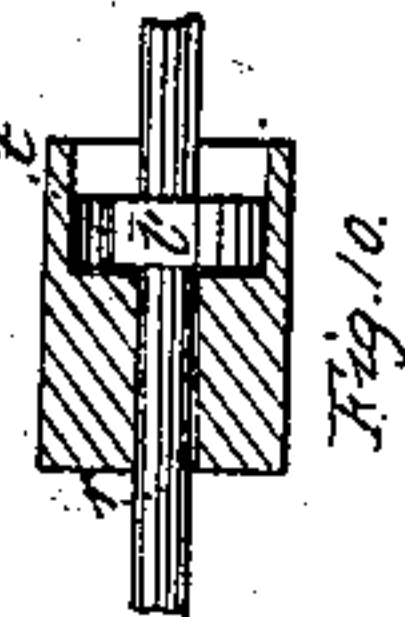
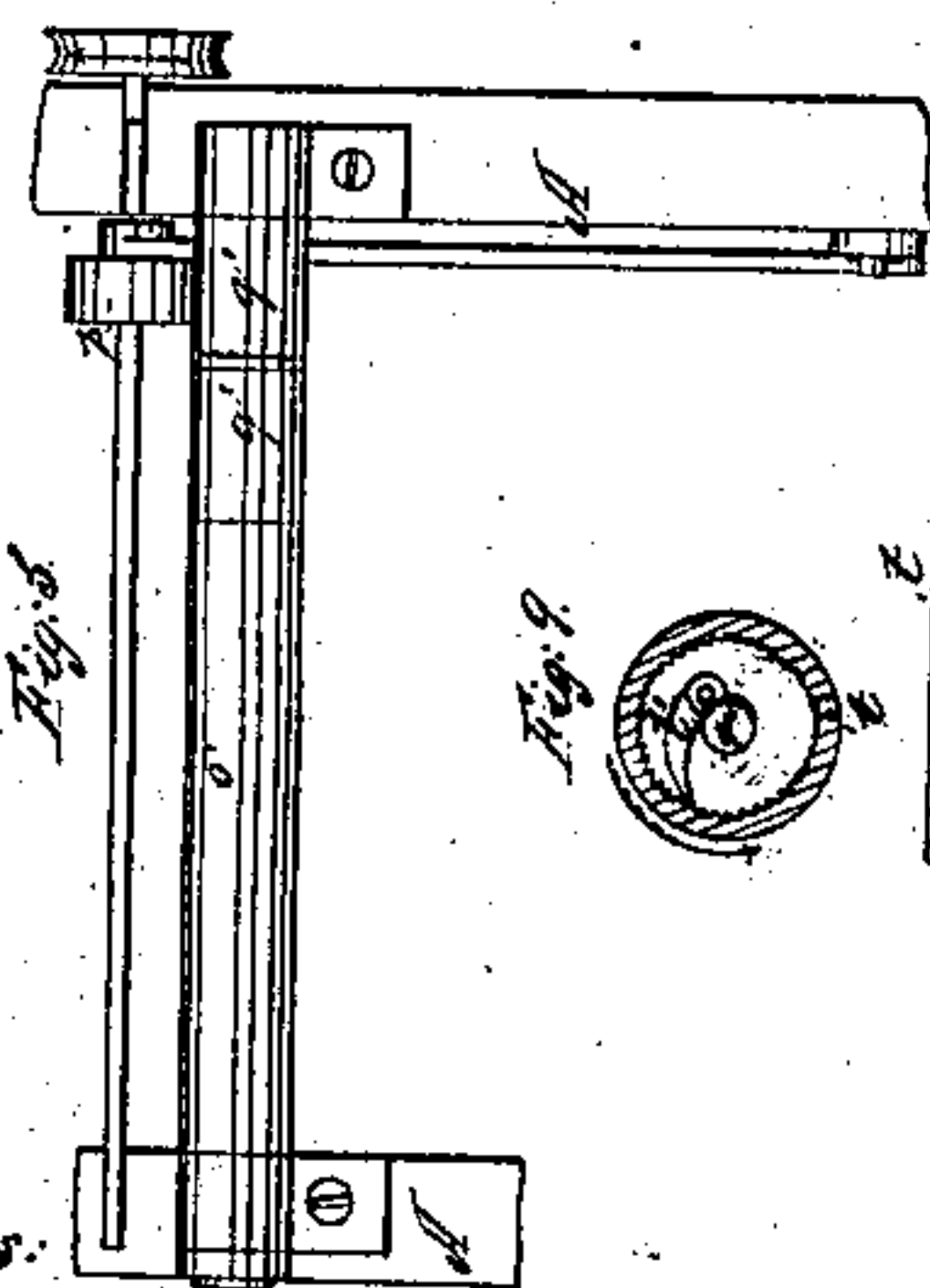
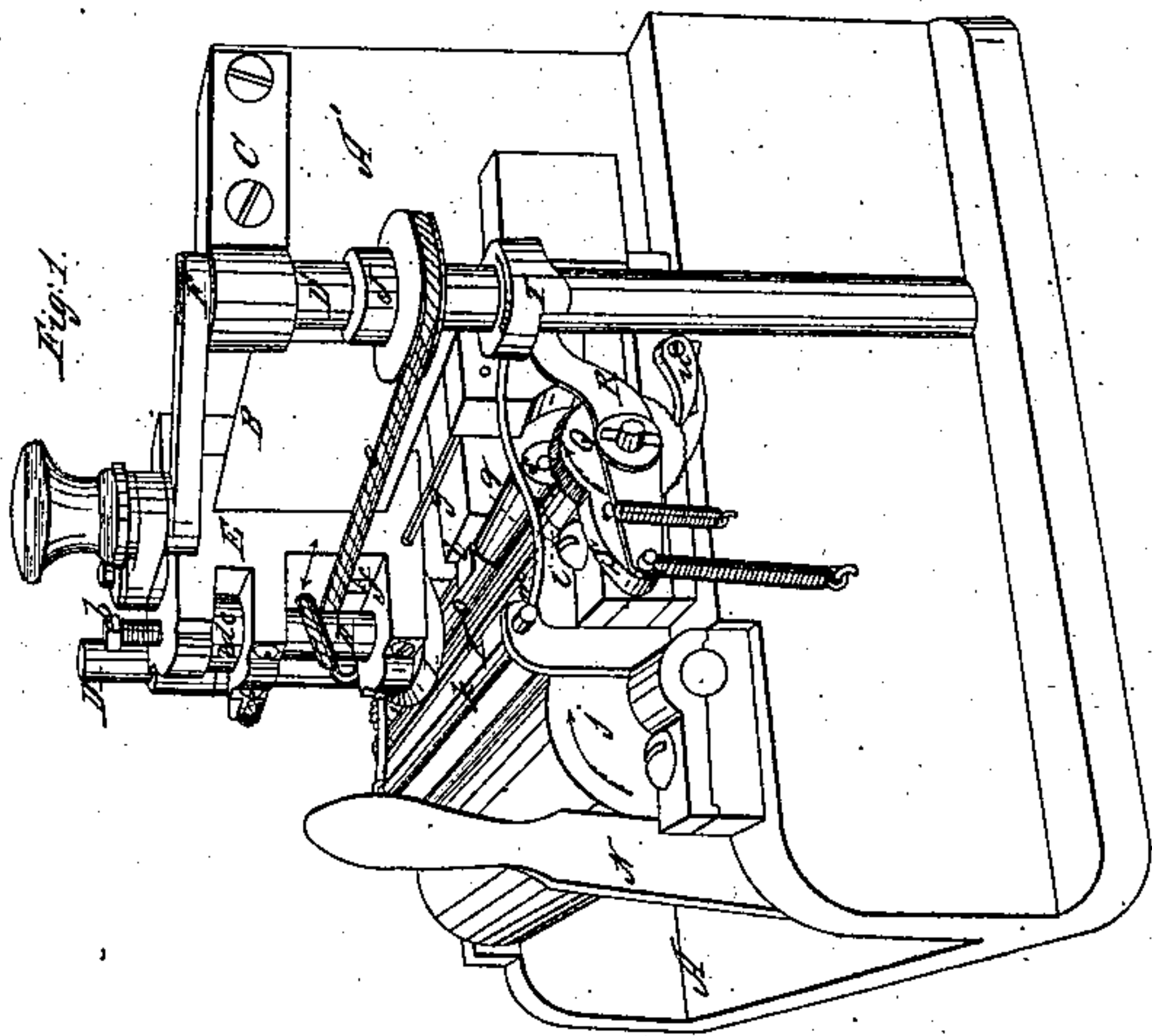
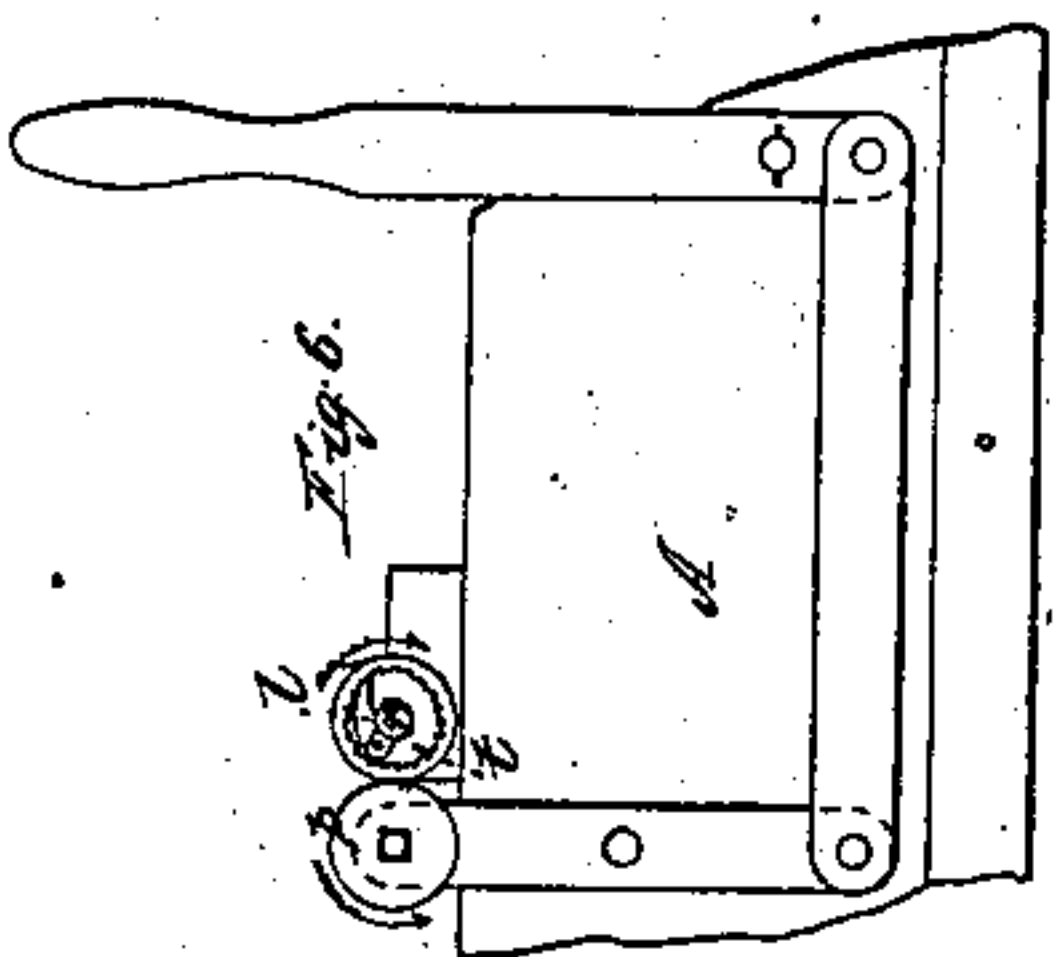
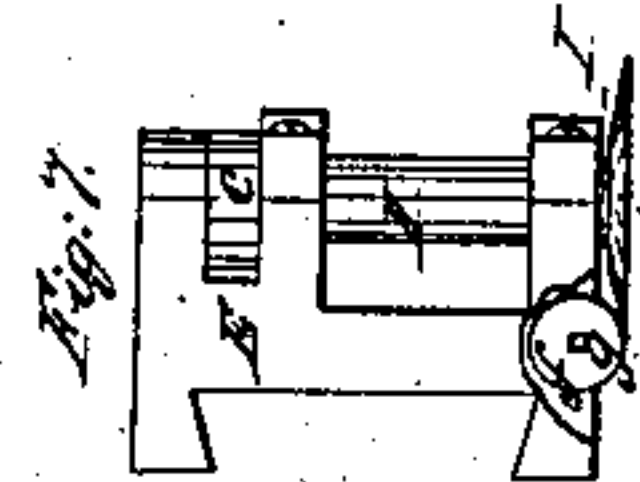
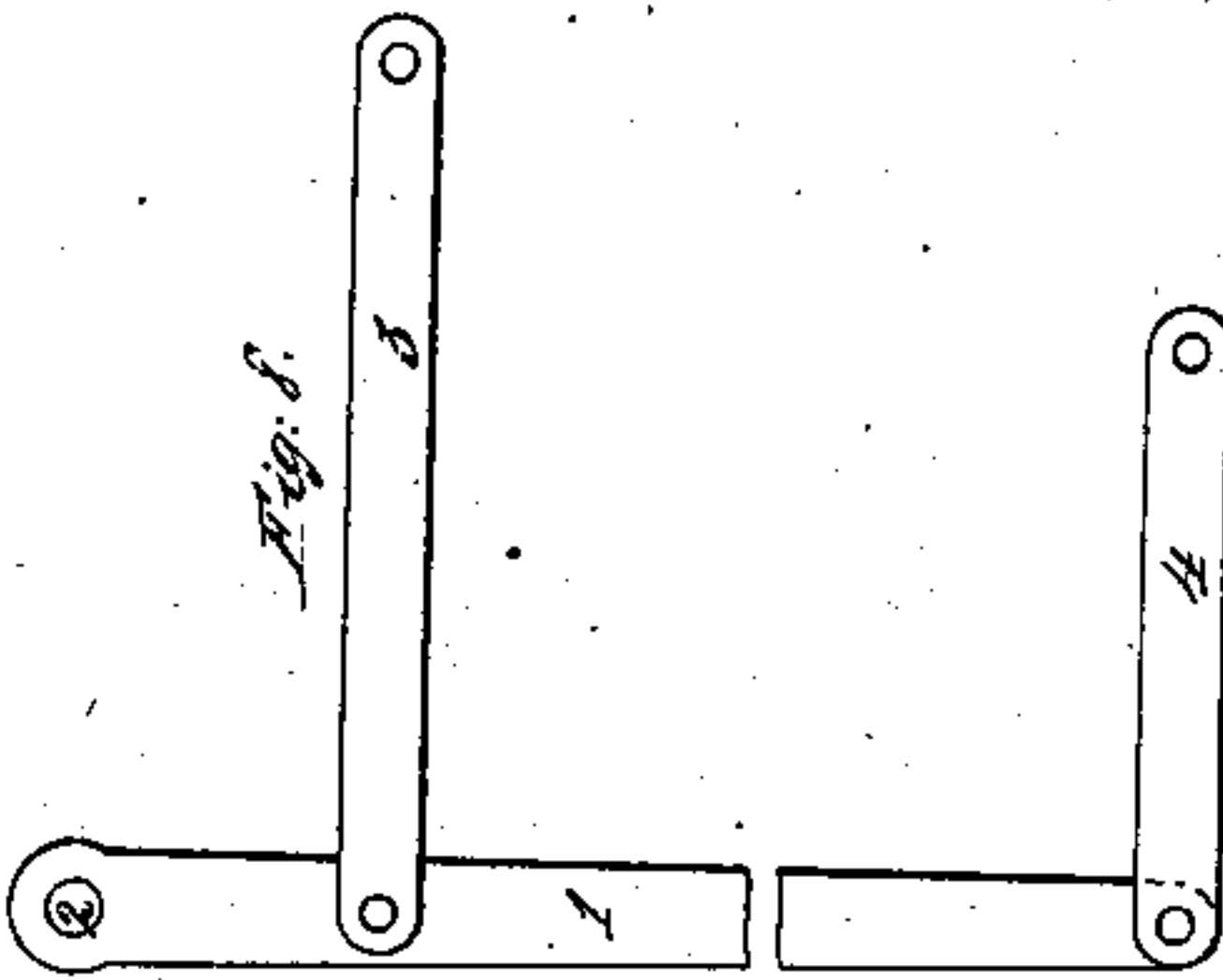
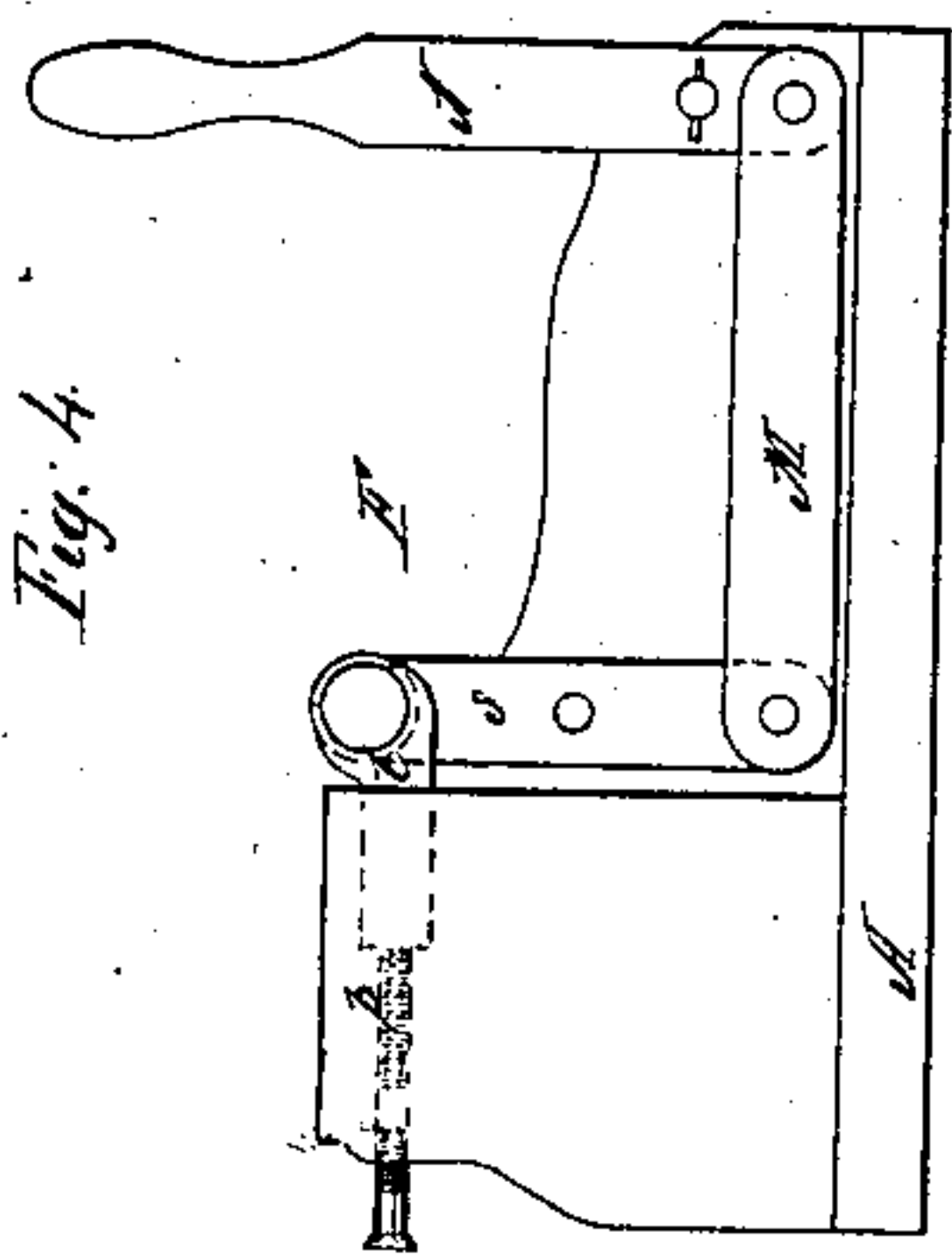
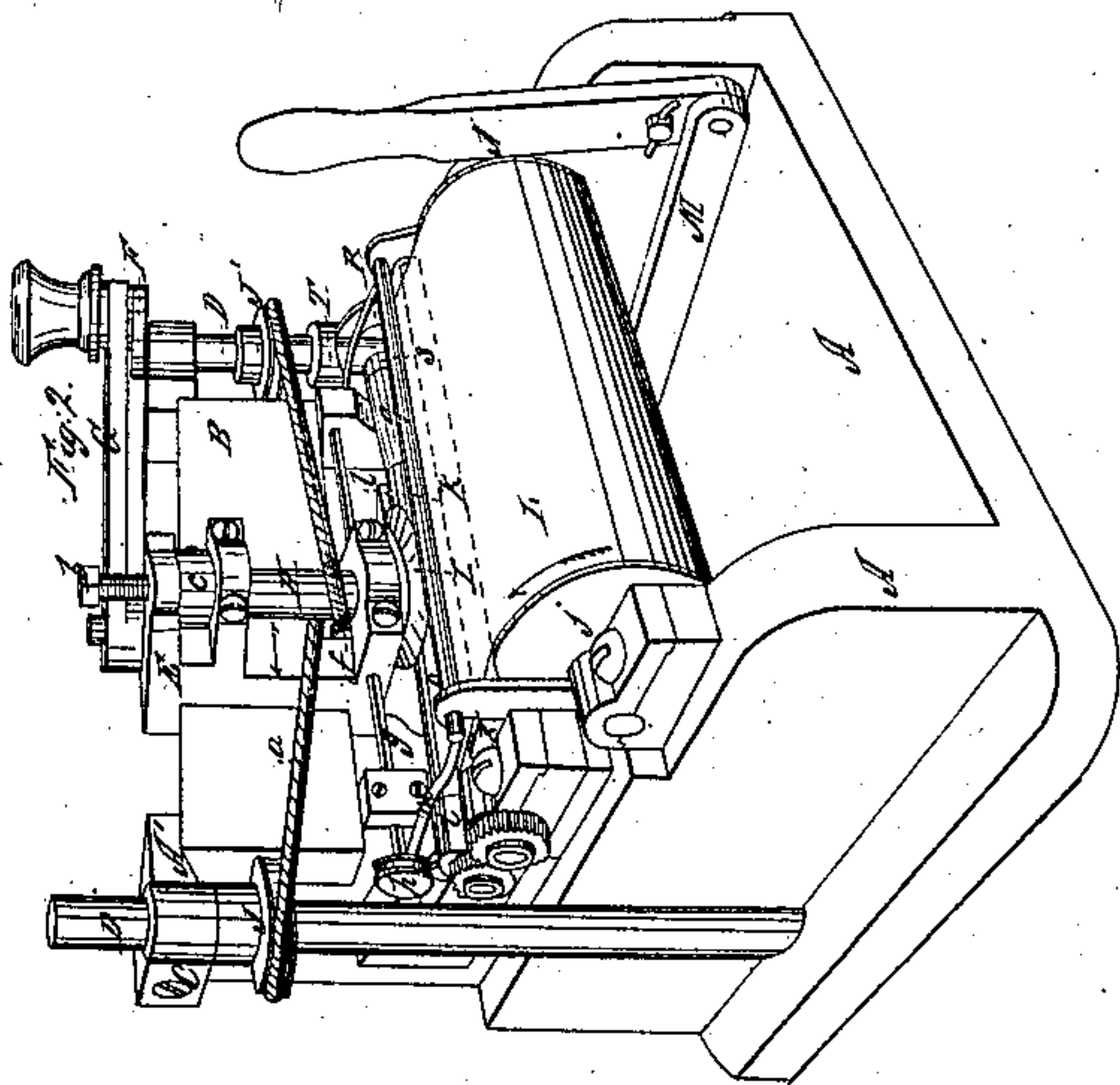
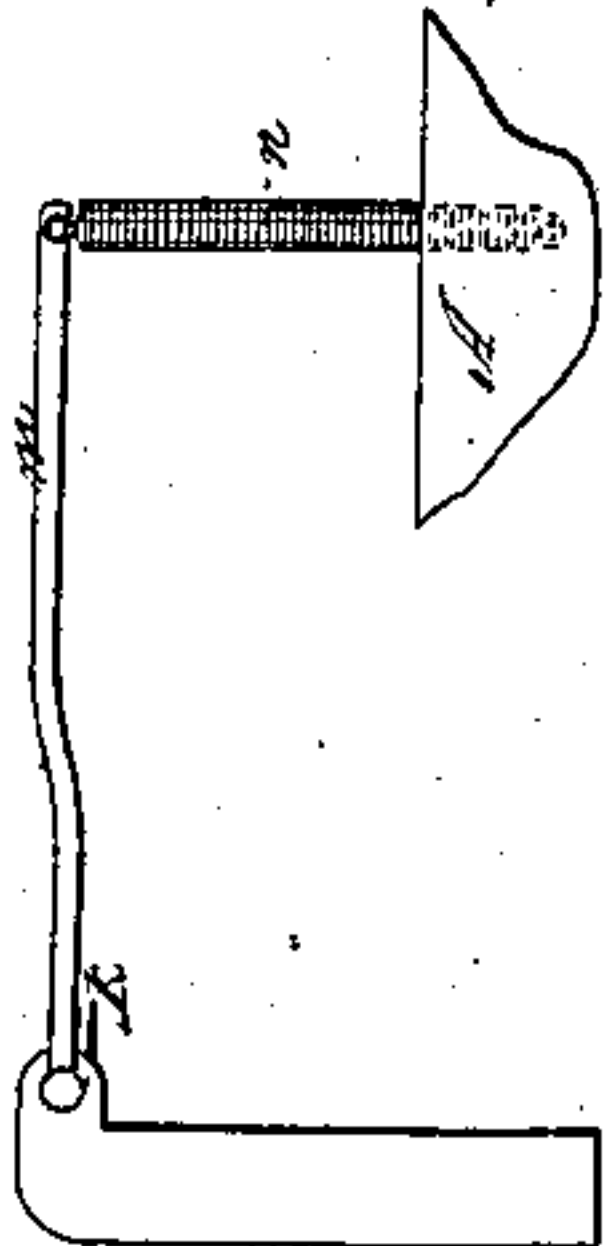


Fig. 11.



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UNITED STATES PATENT OFFICE.

M. H. MERRIAM, OF CHELSEA, AND J. B. CROSBY, OF STONEHAM, MASSACHUSETTS.

LEATHER-SPLITTING MACHINE.

Specification of Letters Patent No. 12,392, dated February 13, 1855.

To all whom it may concern:

Be it known that we, MATTHEW H. MERRIAM, of Chelsea, county of Suffolk, and State of Massachusetts, and JOSEPH B. CROSBY, of Stoneham, county of Middlesex, State aforesaid, have invented an Improved Machine for Splitting Leather and for other Similar Purposes; and we do hereby declare that the following is a full, clear, and exact description of the nature, construction, and operation thereof, taken in connection with the accompanying drawings, which form part of this specification.

The subject matter of our invention relates First, to a new and improved arrangement of a cutting apparatus for machines for splitting or shaving leather, india rubber, cropping the fur &c. from skins, and other analogous uses; and consists in producing what is termed a "drawing cut" by the employment of a disk cutter having a simultaneous rotary and reciprocatory movement relative to the machine in a plane at right angles to the axis of rotation. Second to certain devices for feeding or drawing the leather or other flexible material, and confining the same in close contact with a gage bed or bar, and consists in using an endless apron passing over an elevated bed and rollers combined with another roller having a greater surface speed than that of the apron. Third to certain devices for obtaining an increased feed or draft for the purpose of drawing out the puckers which exist in sides of leather or which may be caused by the operation of the machine; and consists in constructing one of the draft rollers so that it may have a greater surface speed in some portion or portions of it than others, which we accomplish by making a portion of said roller in the form of the frustum of a cone or otherwise in a manner to be more fully described hereafter.

Figure 1, is a perspective view of our invention with the endless apron removed, Fig. 2, is a perspective view of the same, from another position, with the endless apron, Fig. 3, is a plan of the draft roller with its appendages, Fig. 4, is an end elevation of the same, Fig. 5 is a plan of a differently constructed draft roller from the above with its appendages, Figs. 9 and 10, are sections of the same, Fig. 6 is an end elevation of the same, Fig. 7, is a side elevation of the crosshead a portion of which is removed to show the grinding apparatus,

Fig. 8, shows a different mechanism from the one shown in Figs. 1 and 2 for reciprocating the crosshead.

In these figures similar characters refer to similar parts.

(A A A' A') is the framing of the machine of which two upright posts (A' A') on either side thereof serve to support the slide (B) and the pieces (C C) in which are bearings for the upright shafts (D D').

(E) is a crosshead made to reciprocate on the slide (B) by means of the crank (F) to which it is connected by the link (G). In the crosshead are suitable bearings for the reception of the vertical shaft (H) on which is fixed the disk cutter (I), having its edge around the whole or a portion of its periphery concentric with the axis of rotation, its under part made slightly dishing and beveled to an edge from its upper side; this cutter is made to rotate by means of the endless band (a) which encircles the cutter shaft or a pulley thereon and the pulleys (J') and (J) motive power being applied to the shaft (D'); or a band may be fixed by its ends at each side of the machine encircling the cutter shaft and impart a rotary motion thereto consequent upon the reciprocatory, or by a pinion fixed on the cutter shaft and working in a rack placed on the slide (B) thus giving a rotary motion to the cutter shaft in consequence of the reciprocatory as above.

(b) is a screw for depressing the cutter to the required distance from the bed (K) which with the collar (c) secured in position by the set screw (d) regulates the thickness of the split.

(K) is a gage bed or bar, its upper surface being parallel to the slide (B) and to the plane of rotation and reciprocation of the cutter, the distance between the top of this bed or the apron on it and the edge of the cutter determines the thickness of the leather when split.

(f) is a grinder its periphery made to revolve in contact with the disk cutter it is mounted on a square shaft (g) to which motive power may be applied by means of the pulley (h) which rotates it at the same time the grinder, being attached to the crosshead, reciprocates with the cutter.

(L) is an endless apron extending nearly the whole width of the machine stretching over the rollers (j) and (i) and gage bed (K) the rollers being placed in such a posi-

tion relative to the bed (K) that the apron shall press closely to gage bar and recede immediately from the plane of the cutter in the rear of the gage bar.

(*k*) is a spring plate made of thin steel supported in bearings so that it shall incline therefrom toward the gage bar or the apron thereon levers (*m*) and springs (*n*) Fig. 11, are attached to the spring plate so as to cause it to press upon the leather whenever it is interposed between it and the bed or apron, the elasticity of the steel plate allowing it to yield to any inequalities of the leather and yet return to its original position, pressure enough however being always maintained to hold the leather in contact with the bed or apron.

(*o*) is one of the draft rollers geared to the other so that its surface speed shall be somewhat greater than that of the apron (L) or the roller (*i*), the effect of this increased surface speed is to draw the leather "taut" between the "bite" of the rollers and the spring plate which with the position of the rollers below the surface plane of the gage bed confines the under side of the leather in close contact with the bed or apron.

The bearings (*l l*) of the roller (*o*) are allowed to slide back and forth to accommodate various thicknesses of leather, against which it is forced by the springs (*p p*), thus making the straight part of the roller (*o*) self adjusting. The roller (*o*) is constructed in two or more sections one section (*o*) being straight and the other (*q*) joined thereto by a universal joint or any other efficient method and is made in the form of the frustum of a cone the base of the conic frustum terminating in a bearing in the lever (*s*) said lever being connected by a link (M) to the lever (N) which is so placed as to be under the control of the operator. The function of this conic frustum or its equivalent is to draw out the puckers which are naturally found on the belly edges of hides or which may gather there in operation, which is liable to occur, the hide being less dense at those parts. Hides being generally divided into two sides through the back the puckers are principally found near one edge when the hides are not thus divided two increasing draft sections, conic frustums (*q*), or their equivalents may be attached to the roller (*o*). It is also proposed to increase the draft for the same purpose by constructing the draft roller (*o'*) Fig. 5, or a portion thereof in a series of rings (*q' q'*) on a shaft made to rotate with it by means of internal ratchets (*t*) and pawls (*t'*), and any section or ring made to rotate faster than the rest of the roller by applying thereto a friction roller (P) driven at a greater surface speed than the rings of the draft roller (*o'*).

(Q) is a ratchet wheel fixed on the end of the roller (*i*).

(R) is a lever on one end of which is a pawl (S) working in the ratchet wheel, the other end thereof extending under the action of the cam (T) which when the shaft (D') rotates, intermittently depresses the lever and causes the geared rollers (*i*) and (*o*) the apron (L) and roller (*j*) to move in a perfectly obvious manner.

(*u*) is a detaining pawl.

The function of the apron is to assist the draft or feed in carrying the hide along by means of its adhesion thereto so as to lessen the strain upon the hide by the draft roller, it also serves to guide and introduce the end of the hide to the action of the rollers (*i*) and (*o*).

Fig. 8 is a representation of another mode of reciprocating the crosshead.

(1) is an arm suspended over the machine by a shaft or pin (2) on which it is made to oscillate by applying a reciprocatory movement to the connecting rod (3) at the lower extremity of the arm is the connecting rod (4) which connects with the crosshead and causes it to reciprocate as before.

Another mode of reciprocating the cutter is to place it in suitable bearings at the end on an arm vibrating in a horizontal plane, the other end of the arm being made to oscillate on a center, in which case the cut would be in the arc of a circle. These differences with many others not mentioned are mere varieties of construction for the choice of the mechanic.

The operation of our machine is as follows. The cutter (I) is adjusted to the requisite distance from the gage bed or apron by means of the screw (*b*) and collar (*c*), the end of the hide is introduced into the "bite" of the rollers or conducted there by the apron. Motion imparted to the shaft (D) causes the cutter to rotate and reciprocate in the manner before described and in its passage with what is termed a "drawing cut" divides the thickness of the leather. The action of the cam (T) operates the draft rollers and presents a new portion of the hide for the returning stroke of the cutter. The lever (N) is held by the hand of the operator by which the conic frustum or any equivalent therefor is gently pressed against the leather so that its friction shall exert nearly the same draft upon the leather as the straight portion of the roller; when any puckers occur the operator presses the conical portion of the roller harder against the leather not allowing it to slip as much as before until the puckers are all drawn out in consequence of the increased surface speed being made to act more or less efficiently. During the splitting operation the leather is held on the bed or apron by the tension obtained by the draft of the roller drawing

in opposition to the action of the plate (*k*) or, in some cases when the spring plate is dispensed with, to the weight of the hide and its adhesion to the apron.

5 Peculiar advantages are obtained by the cutting apparatus herein described; it cuts easily and smoothly while the cutter is kept perfectly true and sharp by the grinder; by the reciprocating movement it cuts di-
10 rectly across the skin from edge to edge so that the split or shaving may be rolled back from the cutter. By the drawing cut and small cutting surface acting in the manner described the severe strain to which hides
15 are subjected in splitting by the common process of splitting is avoided. By traversing the cutter it can be of small diameter which enables us to keep it true. In the application of our invention to splitting in-
20 dia rubber it will be necessary to apply water to the cutter which may be done by fixing a vessel containing water to the cross head with its outlet directed upon the cutter.

It is evident that the devices employed
25 and the mechanical means by which the movements are obtained may be very much modified or even changed altogether without departing from the principles of our invention which consist in the rotating and recip-
30 rocating cutter the tension of the hide over an elevated bed by means of draft rollers

one of which has a greater surface speed than the other and the resistance of the spring plate or its equivalent and in the de-
35 vices by which the peculiar increasing feed or draft for drawing out the puckers in leather during the process of splitting.

Having thus fully described our invention what we claim as new and desire to secure
40 by Letters Patent of the United States is—

1. The disk cutter having a simultaneous rotating and reciprocating movement as ap-
45 plied to machines for splitting leather and other analogous purposes.

2. We do not claim the broad device of constructing a draft roller so that it shall have a greater circumferential velocity in one part than in another, but what we do
50 claim is:—constructing the draft roller (*o*) so that its increased circumferential velocity may be made to act more or less efficiently as desired substantially in the manner here-
in described.

3. The combination of the apron (*L*) bed
55 (*K*) and draft rollers (*i*) and (*o*) when the roller (*o*) is constructed substantially in the manner and for the purpose herein set forth.

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