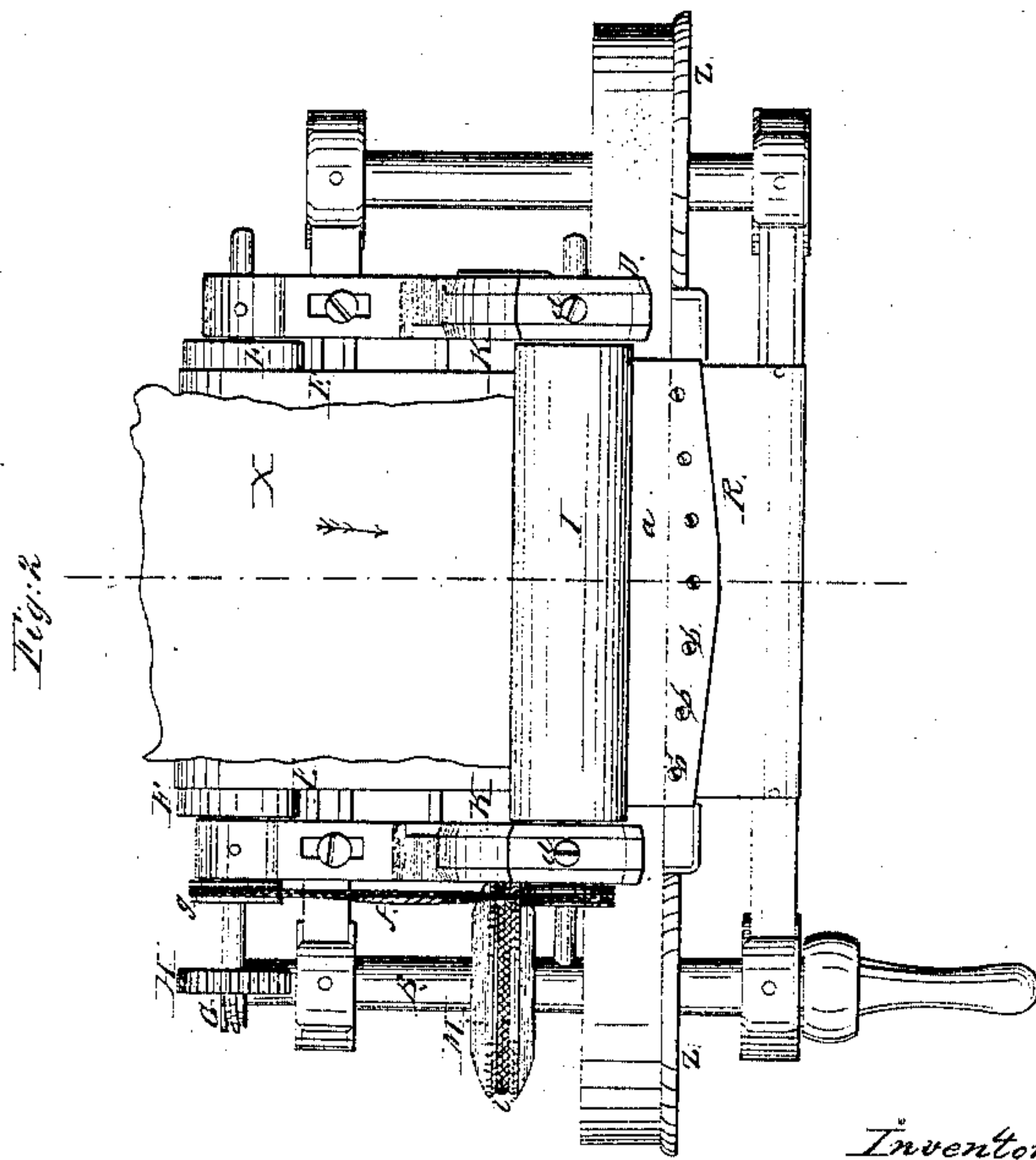
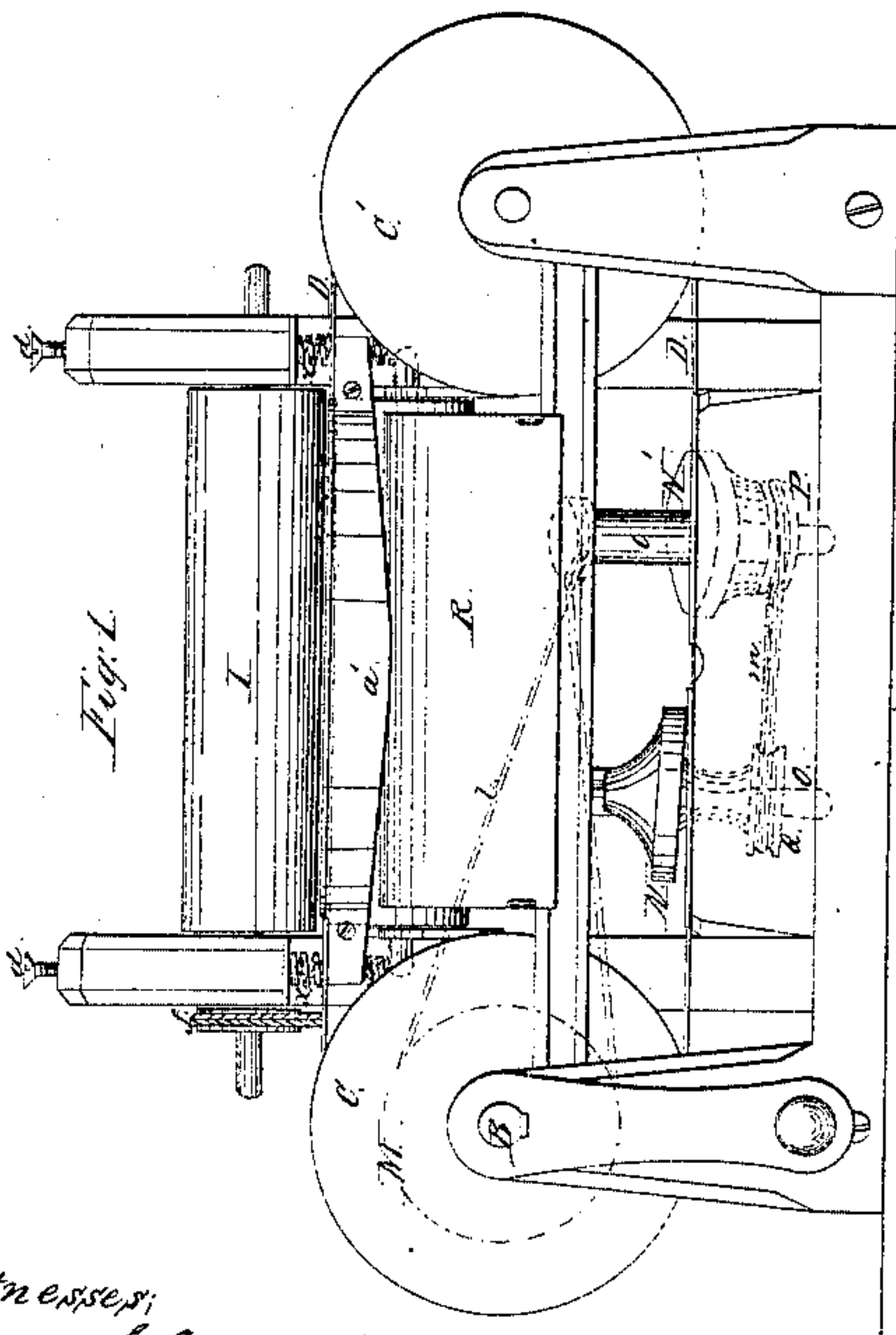
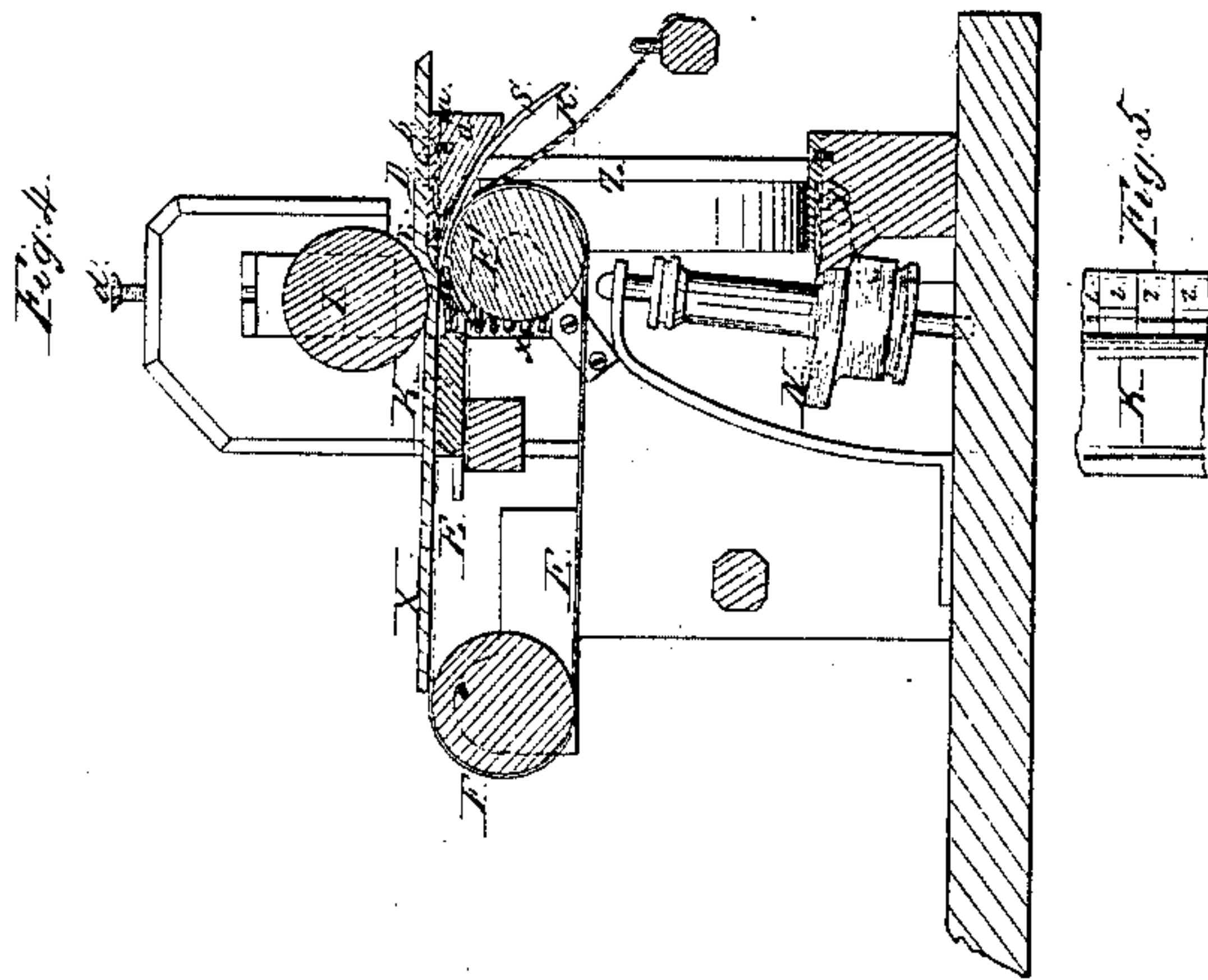
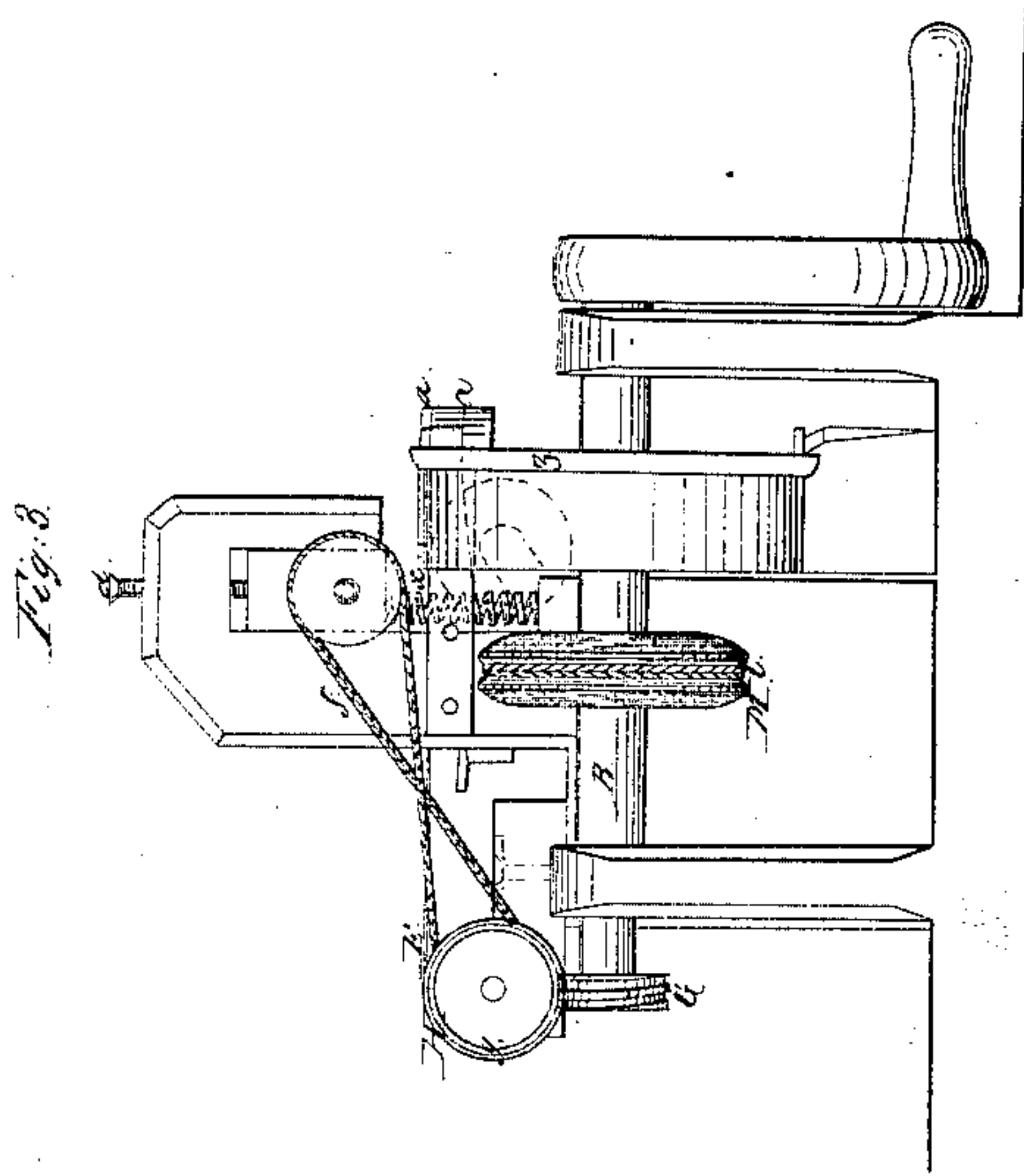


Flanders & Marden,

Splitting Leather,

No. 11,604,

Patented Aug. 29, 1854.



Witnesses;
John S. Clark,
Henry B. Osborn.

Inventors;
Joseph F. Flanders,
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UNITED STATES PATENT OFFICE.

JOSEPH F. FLANDERS AND JEREMIAH A. MARDEN, OF NEWBURYPORT, MASSACHUSETTS.

LEATHER-SPLITTING MACHINE.

Specification of Letters Patent No. 11,604, dated August 29, 1854.

To all whom it may concern:

Be it known that we, JOS. F. FLANDERS and JEREMIAH A. MARDEN, of Newburyport, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Splitting Leather, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a front view of the machine. Fig. 2 a plan of the same. Fig. 3, an end view. Fig. 4 a transverse section upon the line A, A, of Fig. 2. Fig. 5 a portion of the spring rest detached, with the bar to which it is attached.

In machines for splitting leather as heretofore constructed the hide has been drawn through the machine against the edge of a stationary knife, the action of which is necessarily slow, great power being required to actuate the machine on account of the "dead cut" of the stationary knife. To remedy this inconvenience, machines have been contrived, in which the knife was caused to vibrate rapidly back and forth as the leather was fed through in contact with its edge. These machines have however failed to operate beneficially, as the vibrating knife covered the surface of the grain with ridges, and failed to leave the surface smooth. To remedy this evil is the object of our present invention, which consists in the use of a knife composed of an endless belt of sheet metal, which is kept continuously in motion in one direction by suitable machinery and which is free from the objections to which the stationary and vibrating knives are liable.

To enable others skilled in the art to make and use our invention we will proceed to describe the manner in which we have carried it out and also the construction and operation of our machine, and the particulars wherein it differs from all other machines for a similar purpose heretofore known or used.

B is the driving shaft from which the other moving parts of the machine derive their motion.

C, C', are two drums or carrying pulleys, the former upon the driving shaft and the latter upon a short transverse shaft at the other end of the machine; these drums carry the knife D, D, which is composed of a strip of sheet metal, the ends of which are

brazed or otherwise suitably secured together so as to form an endless belt as seen in Fig. 1. The upper portion of this knife which is made to operate upon the leather in a manner which will be hereafter explained, is confined between two jaws or guide plates *a, a'*, which hold the knife sufficiently rigid to prevent it from being bent out of the horizontal plane in which its cutting edge is to operate, without gripping it with sufficient force to create friction, or to impede its motion, the back of the knife resting against a shoulder *c* in the upper jaw *a*, by which it is prevented from being deflected out of its position horizontally by the pressure of the leather. The guide plates *a, a'*, are confined together at suitable distances by screws *b*, or otherwise. E is an endless feed apron carried by the rollers F, F', and upon which the leather is fed to the knife. Motion is communicated to the apron in the following manner—G is an endless screw upon the driving shaft B, which engages with the gear H upon the shaft of the roller F. The latter is thus made to revolve an amount equal to the pitch of the screw G each time the shaft B revolves. As the knife travels a distance equal to the entire circumference of the drum C, C', each revolution of this same shaft, it is evident that the velocity of the knife greatly exceeds that with which the leather is fed into the machine.

I is a roller which bears upon the upper surface of the leather and is regulated in position in the customary manner by the set screws *d*, and springs *x*, according to the nature of the work to be performed. This roller is driven in a direction corresponding to the motion of the hide by the crossed band *f* from the pulley *g* upon the shaft of the roller F.

In machines of this class as heretofore constructed the weight of the "split" is often sufficient to drag down the upper roller I, which causes the grain to be of unequal thickness, and oftentimes severs it upon the knife; to guard against this difficulty and to keep the leather always firmly pressed up against the under surface of the roller I, we have adopted the following expedient. K is a bar in the position seen in section in Fig. 4, which lies immediately beneath the feed apron E, and runs longitudinally through the machine. *h*, is a spring plate secured to the bar K, and pro-

jecting beyond it beneath the roller I. This projecting portion (Fig. 5) is slit into a number of independent springs i, i , by the action of which every portion of the hide is kept uniformly pressed up against the upper roller, whatever may be the thickness or irregularity of the hide, a uniformity of thickness being thus given to the "grain" which cannot be otherwise attained.

10 Theretofore it has been necessary to remove the knife from the frame whenever it required to be sharpened or at least to interrupt its operation. To avoid this necessity and to keep the knife always sharp is the object of the next branch of our invention, which consists in the arrangement of two revolving stones or sharpeners which are arranged above and below the knife in such positions that they shall operate upon its edge, which is thereby kept continually sharp and in the best possible condition for the performance of its work. These sharpening stones N, N', Figs. 1 and 4 are secured to the shafts O, O', and are set in motion as follows; a band l , from a pulley M upon the main shaft gives motion to the stone N', the shaft of which carries a pulley P, from which a band m passes to the pulley Q (seen in dotted lines in Fig. 1), by which means motion is communicated to the shaft O and grindstone N. It is evident that if the constant action of these stones upon the knife be not required to keep it sharp that they may be caused to operate at intervals, and under certain circumstances stationary stones or other sharpeners may be made to operate upon the knife in place of the revolving one.

40 R is an inclined table or metallic plate which receives the "split" as it comes from the knife and guides it out of the machine. The continuously revolving knife in connection with the sharpening stones enables us to employ a sheet iron knife instead of

a steel one, heretofore rendered necessary; the latter however may be entirely dispensed with in our machine, as the iron band has been found to answer every purpose. As the knife moves with a great velocity compared with that of the material it will readily be seen that all the advantages of a "draw cut" are obtained, and that the machine will operate much more rapidly than the stationary knife machines, and with the expenditure of far less power.

In order that the knife may be preserved in its proper position upon the drums C, C', the latter are furnished with flanges z , against which the knife is forced by the pressure of the leather.

Operation: Rotary motion being communicated to the driving shaft B, the endless knife is set rapidly in motion, and the hide X to be operated upon is laid upon the feed apron E, and is carried in between the rollers F' and I; the distance of the latter from the edge of the knife being adjusted by its set screw d to accommodate it to the thickness of the required "grain" which then passes out of the machine at r , the "split" passing out beneath the knife at S, and the spring plate keeping every portion of the hide firmly pressed up against the roller I, by which as before explained a great uniformity of grain is obtained.

Claim—

What we claim as our invention and desire to secure by Letters Patent is—

The use of the continuously revolving or endless belt knife as applied to machines for splitting leather and operating in the manner substantially as set forth.

JOSEPH F. FLANDERS.
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Witnesses:

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