

No. 776,686.

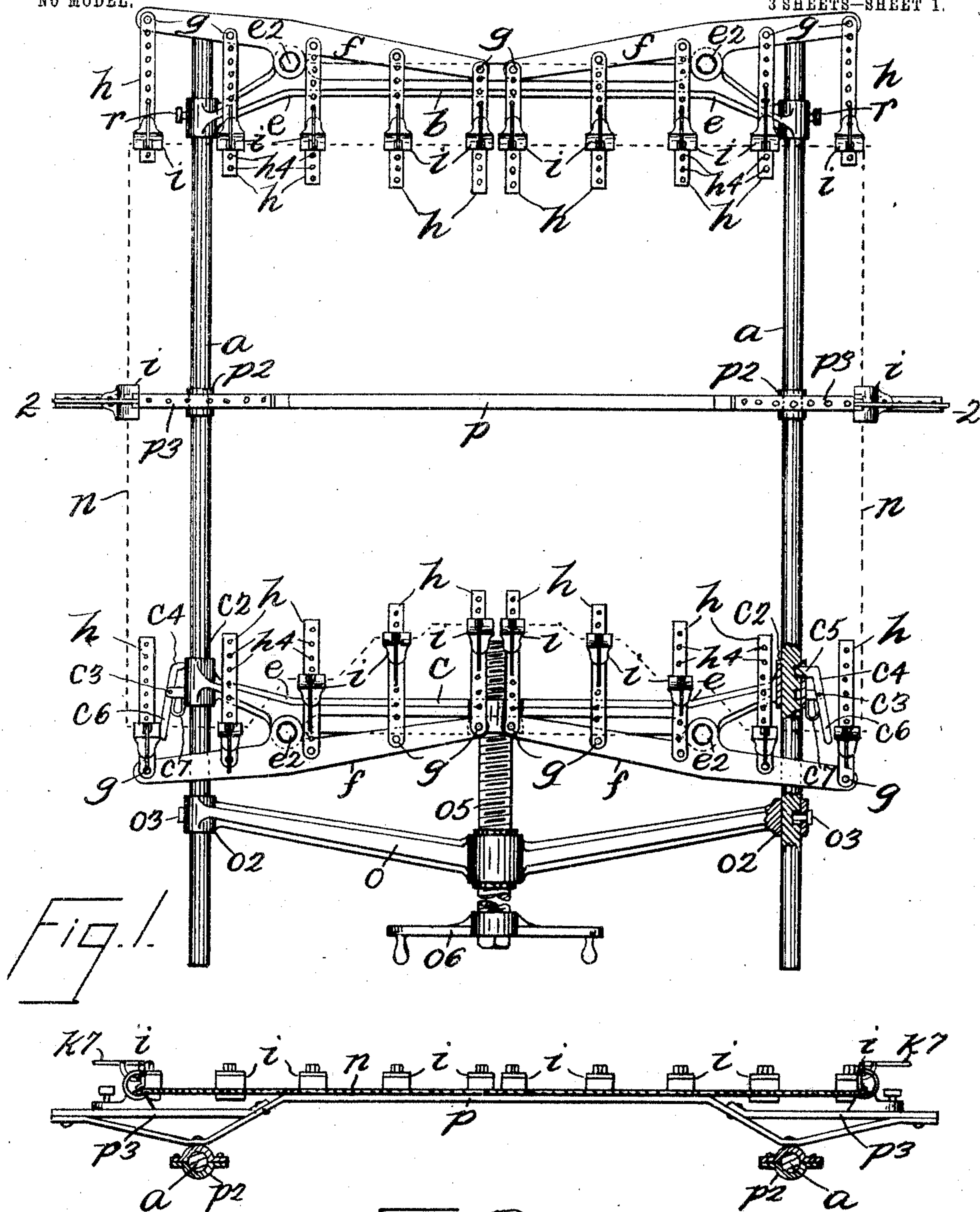
PATENTED DEC. 6, 1904.

E. L. POST.  
LEATHER STRETCHING MACHINE.

APPLICATION FILED AUG. 27, 1904.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES  
*J. E. Larkin*  
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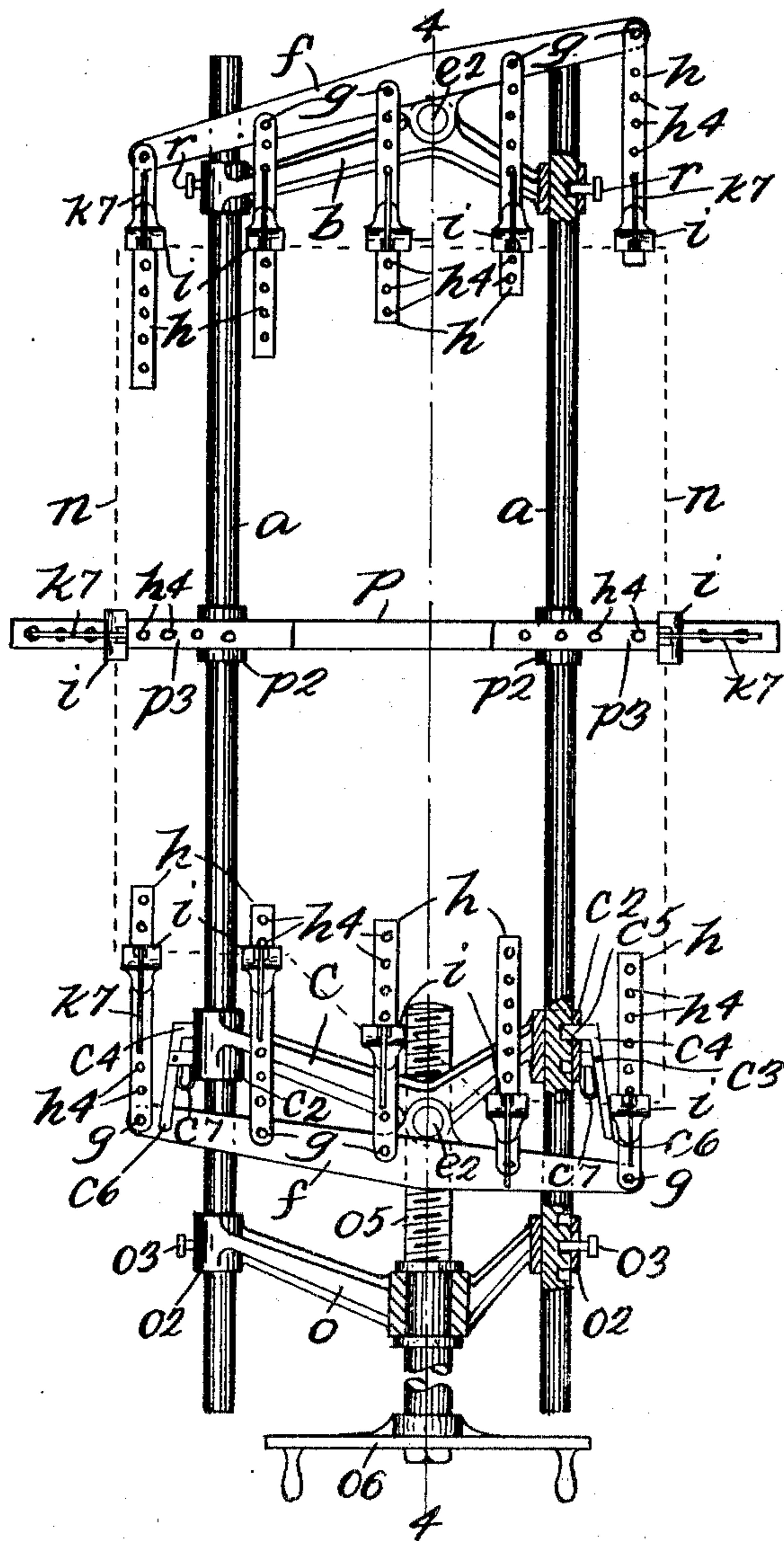


Fig. 3

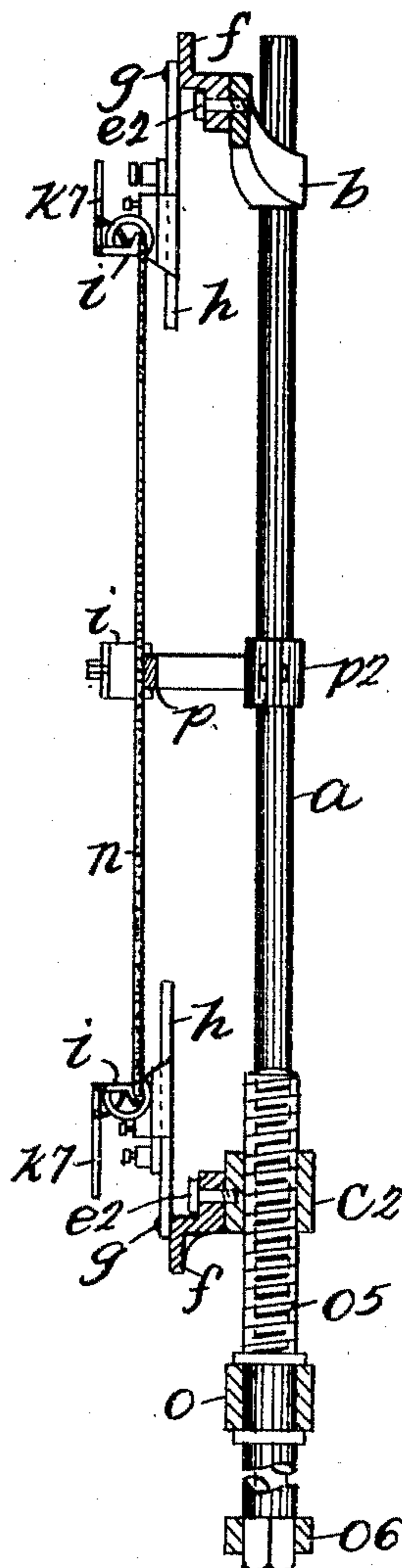


Fig. 4

WITNESSES

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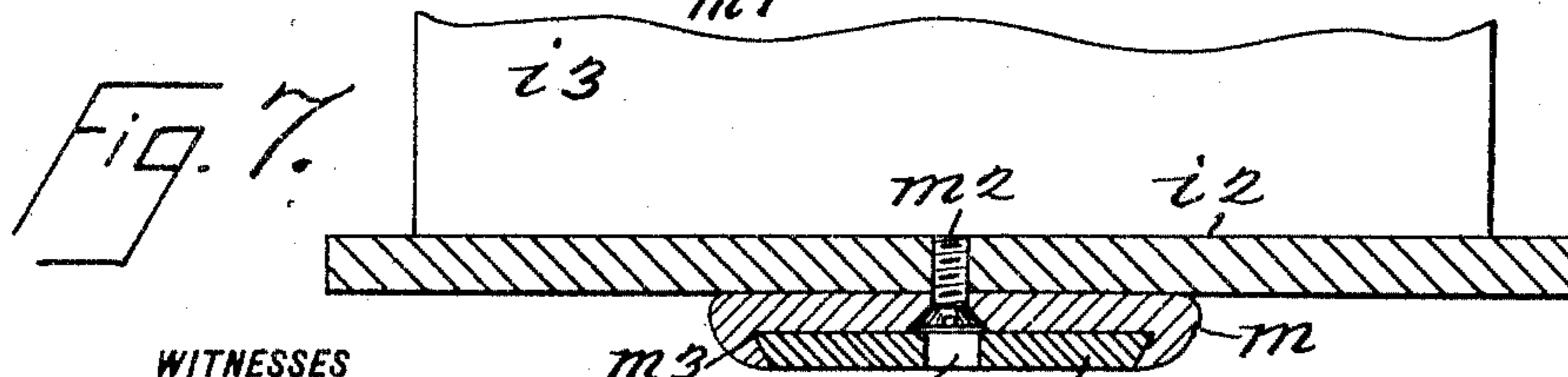
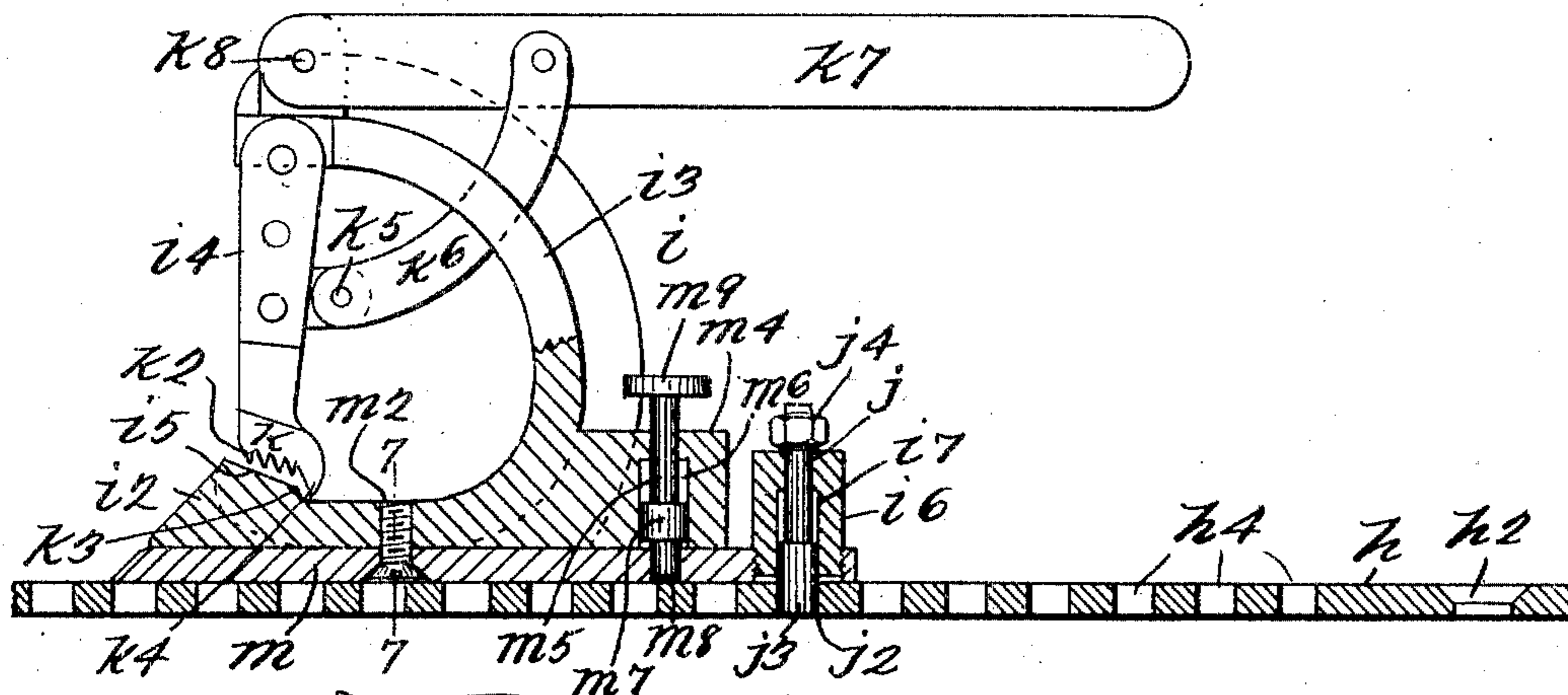
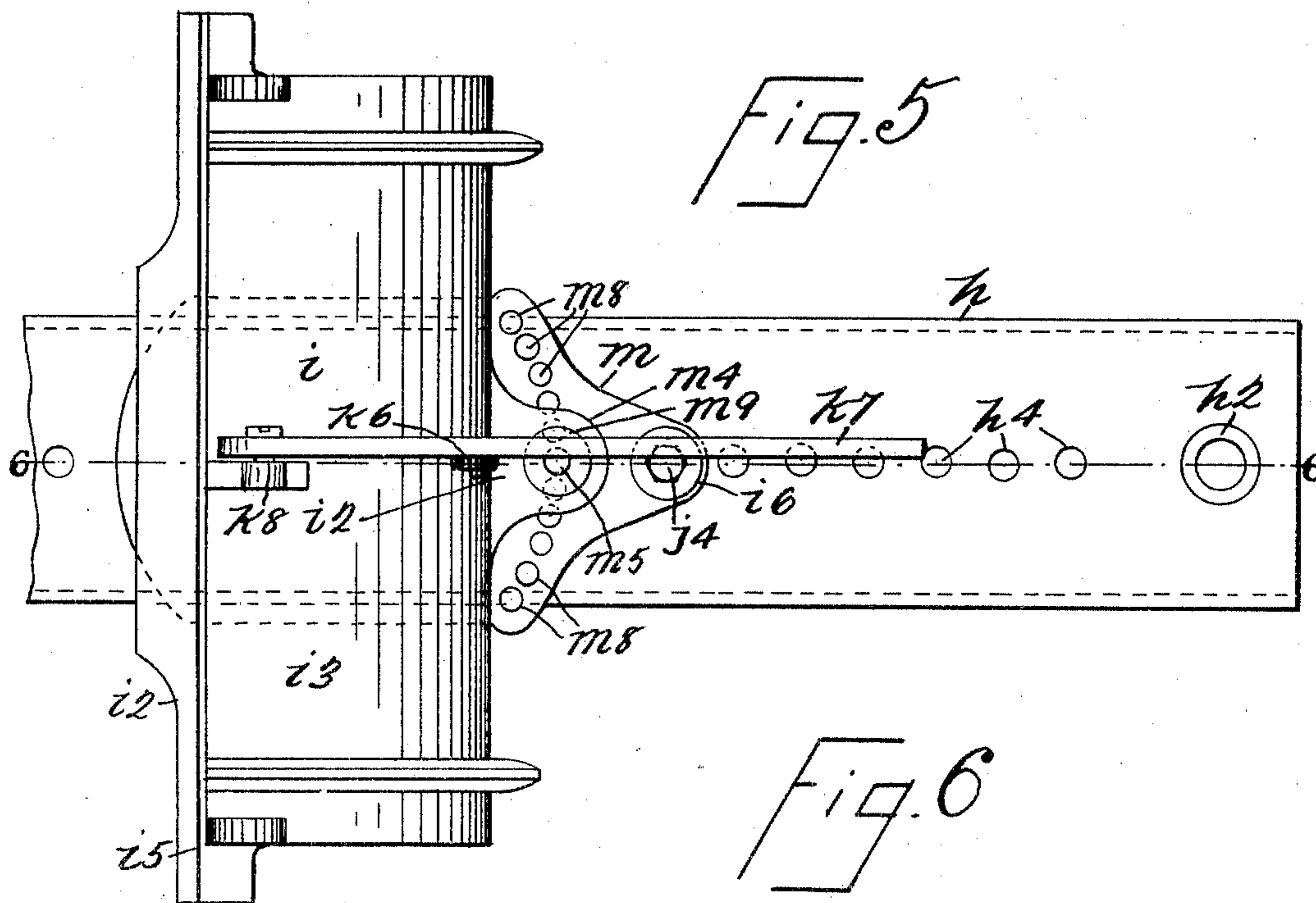
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3 SHEETS—SHEET 3.



**WITNESSES**

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# UNITED STATES PATENT OFFICE.

EZRA L. POST, OF WALLINGFORD, CONNECTICUT.

## LEATHER-STRETCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 776,686, dated December 6, 1904.

Application filed August 27, 1904. Serial No. 222,384. (No model.)

*To all whom it may concern:*

Be it known that I, EZRA L. POST, a citizen of the United States, residing at Wallingford, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Leather-Stretching Machines, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved machine for stretching leather from which power-belts are made, so that the belts when made from such leather will not stretch more at one edge than at the other.

It is a well-known fact that the hides from which belting-leather is made are tougher and stronger along the longitudinal center thereof than at the opposite edges, and when leather made from these hides is cut into strips which are secured together to form power-belts these belts are softer at one edge than at the other and will stretch more at such edges, and this makes the belt longer at one edge than at the other and prevents the same from properly fitting the driving-pulleys and also throws more strain upon one edge of the belt than the other and causes the belt to run crooked or work off of the pulleys. It is also a well-known fact that hides of the class referred to are thicker and softer at the edges or side portions thereof than at the longitudinal center, and in order to avoid the objections above specified to belts made from leather cut from such hides all portions of the leather must be so stretched that when the strips are cut longitudinally from the leather and sewed or otherwise secured together the entire belt so formed will possess throughout its length and breadth the same degree of firmness and strength and the same power of resistance in order that it will not stretch more at one point than at another or at one edge than at another; and the object of this invention is to provide a machine which will accomplish these results.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated

by suitable reference characters in each of the views, and in which—

Figure 1 is a plan view of one form of my improved machine or apparatus for stretching a whole hide and showing the hide in position in dotted lines; Fig. 2, a partial section on the line 2 2 of Fig. 1 and showing the hide in section; Fig. 3, a view similar to Fig. 1, but showing a machine for stretching half a hide and showing the half-hide in position in dotted lines; Fig. 4, a partial section on the line 4 4 of Fig. 3 and showing the hide in section; Fig. 5, a plan view of a clamp which I employ; Fig. 6, a sectional side view thereof, and Fig. 7 a section on the line 7 7 of Fig. 6.

In Fig. 1 of the accompanying drawings I have shown my invention applied in a machine or apparatus for stretching a whole hide, and in the practice of my invention as shown in this figure I provide a main frame composed of two longitudinally-arranged and parallel side bars, rods, or tubes *a*, which are preferably cylindrical in form, and these side bars or members are connected at one end by a stationary cross-head *b* and at the opposite end by a cross-head *c*, movable longitudinally thereon. In the form of construction shown the cross-head *c* is provided with end sleeves *c*<sup>2</sup>, through which said frame members are free to pass, and pivoted to the outer side of the sleeves *c*<sup>2</sup>, as shown at *c*<sup>3</sup>, are dogs *c*<sup>4</sup>, having beveled inwardly-directed noses *c*<sup>5</sup>, which are adapted to pass through holes in the sleeves *c*<sup>2</sup>, as shown in Fig. 1, and to enter corresponding notches or recesses in the frame members *a*, and the dogs *c*<sup>4</sup> are provided with handle members *c*<sup>6</sup>, between which and said frame members are placed springs *c*<sup>7</sup>, which serve at all times to force the noses of the dogs *c*<sup>4</sup> inwardly, as shown at the right of Fig. 1; but the said noses of said dogs are so beveled that the cross-head *c* is free to move toward the adjacent ends of the frame members *a*.

The cross-heads *b* and *c* are preferably of the form shown in the drawings, each being bent outwardly, as shown at *e*, and pivoted to each of said cross-heads at *e*<sup>2</sup> are two cross-bars *f*, said cross-bars being free to swing over the side frame members *a* and over the cross-heads *b* and *c*. Each of the cross-bars

$f$  is provided at regular intervals with a pin, screw, or similar device  $g$ , five of which are employed on each bar in the form of construction shown, and I also provide a plurality of  
5 clutch-holders  $h$ , which equal in number the pins or screws  $g$  and which are pivotally connected with said bars thereby.

The bars  $f$  are longer at their inner than at their outer ends, and the clutch-holders  $h$  are  
10 clearly shown in Figs. 5 and 6, and said holders are provided in one end with a large circular opening  $h^2$ , adapted to receive the pins or screws  $g$ , and each of said holders is also provided at regular intervals with holes  $h^4$ .

15 Mounted on each of the bars or clutch-holders  $h$  is a clutch  $i$ , and these clutches consist of a wide base portion  $i^2$ , an upwardly and forwardly curved member or arm  $i^3$ , connected with the rear end of the base portion, and a  
20 pivoted jaw  $i^4$ , suspended from the front end of said arm, the base portion being also provided with a stationary transverse front jaw  $i^5$ . The connection of the clutch  $i$  with the clutch holder or bar  $h$  is made by means of a  
25 plate  $m$ , which is pivoted centrally to the base  $i^2$  of the clutch, as shown at  $m^2$ , by a screw or in any other preferred way, and the bar  $h$  is connected with the bottom of the plate  $m$  by a tongue-and-groove joint, as shown at  $m^3$ , all  
30 this construction relative to the clutch being best shown in Figs. 5, 6, and 7. As thus connected it will be seen that the clutch  $i$  is free to turn in a horizontal plane on the plate  $m$ , and said plate is free to slide on the bar  $h$  and  
35 may be locked thereto at any desired point, this operation being accomplished by means of a raised portion or member  $i^6$  at the rear end of the plate  $m$ , in which is formed a recess  $i^7$ , which opens downwardly and in which  
40 is mounted a vertically-movable pin or bolt  $j$ , having an enlarged member  $j^3$  at the lower end thereof and said lower end of which is adapted to fit in the holes  $h^4$  in the bar or clutch holder  $h$ , as shown at  $j^2$ , and the top of which  
45 is provided with a nut or head  $j^4$ , by which said pin may be raised.

At the rear side of the base part  $i^2$  of the clutch is a projecting shoulder  $m^4$ , in which is mounted a vertically-movable pin  $m^5$ , and said  
50 shoulder is provided with a recess  $m^6$  and the pin  $m^5$  with a collar  $m^7$ , vertically movable in said recess, and the lower end of the pin  $m^5$  is adapted to enter segmentally-arranged holes  $m^8$ , formed in the rear end portion of the plate  
55  $m$ , and in this way the clutch  $i$ , which is adapted to swing in a horizontal plane on the holder  $h$ , may be locked at any desired point, and the pin  $m^5$  is provided at its upper end with a head  $m^9$ , by which it may be operated.

60 It will be observed that the transverse stationary jaw  $i^5$  of the clutch  $i$  if raised above the base portion of said clutch, and the bearing-surface  $i^8$  thereof, is downwardly and backwardly inclined and said surface is smooth.  
65 The jaw  $i^4$  is pivoted to the arm  $i^3$ , and the

bearing-surface  $k$  thereof when said jaw is in its lowest position is parallel with the bearing-surface of the jaw  $i^5$ , and slightly above the same the bearing-surface  $k$  of the jaw  $i^4$  is provided with longitudinal teeth or serrations  $k^2$ , and the jaw  $i^4$  is also provided at its rear edge with a transverse lip  $k^4$ , which when said clutch is not in use, as shown in Fig. 4, projects below the rear lower edge of the jaw  $i^5$ , which is provided with a longitudinally-arranged and raised shoulder  $k^3$ , against which said lip bears.

Pivoted to the back of the jaw  $i^4$ , as shown at  $k^5$ , is a segmental handle-piece  $k^6$ , which passes upwardly through a slot or opening in  
80 the arm  $i^3$ , and is pivoted to a handle-lever  $k^7$ , which is pivoted to the front edge of the segmental member or arm  $i^3$ , as shown at  $k^8$ , and by means of the handle-lever  $k^7$  the jaw  $i^4$  may be raised whenever desired. It will be  
85 observed that the base portion  $i^2$  of the clutch, the stationary front jaw  $i^5$ , and the pivoted jaw  $i^4$  are of considerable width, the object of this being to provide an extensive clutch-surface, and the arm  $i^3$  is also of considerable width or about as wide as the base  $i^2$ .

In Fig. 1 of the drawings I have indicated in dotted lines at  $n$  a hide which it is desired to stretch, and this hide is trimmed in the  
90 usual manner before putting it in the machine or apparatus, and this indication of the hide or sheet of leather to be stretched is made only for the purpose of showing the operation of the machine or apparatus.

In Figs. 3 and 4 I have shown another form  
100 of my improved machine or apparatus which is intended for stretching one-half of a hide divided longitudinally of the center thereof, and in this form of construction the leather or the half of the hide is indicated by the  
105 dotted lines  $n$  in Fig. 3 and shown in section in Fig. 4.

The only difference between the form of construction shown in Figs. 3 and 4 and that shown in Fig. 1 consists in the fact that the  
110 side rods or frame members  $a$  are placed closer together, and the cross-heads  $b$  and  $c$  are made shorter, and a single bar  $f$  is pivoted to each of said cross-heads at a point at one side of the longitudinal center thereof, and one end  
115 of the bars  $f$  is shorter than the other, as clearly shown, and the bars  $f$  are free to swing over the side frame members  $a$  and over the cross-heads  $b$  and  $c$  and as clearly indicated in Fig. 4, and said Fig. 4 also shows the  
120 relative position of these parts in Fig. 1. The side frame members  $a$  are also provided in the form of construction shown in Fig. 1 and at the end opposite the stationary cross-head  $b$  with a supplemental cross-head  $o$ , having  
125 end sleeves  $o^2$ , through which the frame members  $a$  pass, and the cross-head  $o$  may be locked to the side frame members  $a$  at any desired point by means of pins or similar devices  $o^3$ , which pass through the sleeves  $o^2$ , and  
130

corresponding recesses in the side frame members  $a$  and a screw  $o^5$  is passed through the cross-head  $o$  and adapted to turn freely therein, and the inner end of this screw passes  
 5 through the longitudinally-movable cross-head  $c$ , and the outer end of said screw is provided with a head or handle-arm  $o^6$  by which it may be turned, and by means of the screw  $o^5$  the cross-head  $c$  may be drawn outwardly  
 10 in the operation of stretching the hide, and said cross-head will be automatically locked at any point by the dogs  $c^4$ , and the said cross-head  $c$  may be moved inwardly by releasing said dogs, and this same construction is also  
 15 employed in the form of machine shown in Figs. 3 and 4 for operating the longitudinal movable cross-head  $c$ . My invention, however, is not limited to any particular means for moving the cross-head or heads  $c$  in the  
 20 operation of stretching the hide, and any suitable means may be employed for this purpose.

In practice the machine or apparatus is placed on a suitable support and so placed that it cannot be moved longitudinally, suitable  
 25 bearings being provided against which the ends of the frame members  $a$  abut.

The operation of the form of construction shown in Fig. 1 will be as follows: Whenever it is desired to stretch a whole hide or sheet  
 30 of leather made from a whole hide from which power-belted is to be made, the said hide or sheet of leather is prepared in the usual manner and is placed on the machine or apparatus, the cross-head  $c$  or the position thereof being  
 35 adjusted to correspond with the length of the hide or sheet of leather. The opposite ends of the hide or sheet of leather are then connected with the clutches  $i$ , which are connected with the cross-bars  $f$ , and the cross-head  $c$  is  
 40 moved outwardly. It is well known that the central longitudinal part of a hide is tougher and stronger than the side portions, and this is the reason why a power-belt made from a  
 45 hide of leather will stretch more at one edge than at the other. With my improved machine when the strain is thrown on the bars  $f$  all parts of the hide will be stretched, but the central part will not yield as much as the side  
 50 parts, and the outer ends of the bars  $f$  will thus be stretched more at the sides than at the middle thereof, and in this way all the stretching and yielding qualities of the leather will be taken out, and when a belt is made there-  
 55 from the belt will possess the same resistance power throughout its entire length and width and will not stretch more at one side than at the other.

In the form of construction shown in Figs. 3 and 4, which is designed for the purpose of  
 60 stretching a half of a hide divided longitudinally, the longer ends of the bars  $f$  are connected with the central portion of the half of the hide or with the part thereof which constitutes the central portion of the hide, while  
 65 the shorter ends thereof are connected with

side portion of the half of the hide which possesses less power of resistance and which will stretch more than the central portion of the hide, and the operation of this form of construction will be the same as that shown in  
 70 Fig. 1, and with both forms of construction the hide or the sheet of leather formed from a hide will be stretched throughout all its parts, so as to render all its parts of equal density and equal strength in the resistance  
 75 of force applied thereto, as in the case of power-belts made therefrom. Before placing the hide or sheet of leather on the apparatus it is wet or soaked, so as to render it soft and pliable and so as to facilitate the operation of the  
 80 apparatus, and in both forms of construction the greatest amount of force is applied to that part of the hide or leather with which the shorter ends of the bars  $f$  are connected.

I also employ in the form of construction  
 85 shown in Fig. 1 a cross member  $p$ , which connects the side frame members  $a$  and which is connected therewith by sleeves  $p^2$ , mounted on said frame members, and the end portions of which are preferably slightly lower than the  
 90 central portion thereof, as shown at  $p^3$ , and the lower end portions of the cross member  $p$  are provided with clutches  $i$ , exactly similar in all respects to the clutch shown in Figs. 5 to 7, inclusive, with the exception that the  
 95 lower end portions  $p^3$  of the cross member  $p$  take the place of the clutch holders or bars  $h$  shown in said figures. This arrangement is clearly shown in Fig. 2, and the object thereof is to prevent the longitudinal wrinkling or  
 100 twisting of a hide in the operation of stretching it and to hold the hide perfectly smooth and even at all points, and this cross member  $p$  is also employed in the construction shown in Figs. 3 and 4 and for a similar purpose.  
 105

By employing the clutch-holders  $h$ , which are adapted to swing in a horizontal plane on their pivotal supports, and the pivoted clutches  
 110  $i$ , which are adapted to swing in a horizontal plane on the holders  $h$  and to be locked at any desired point in said plane, I provide means whereby an exact amount of strain may be thrown open, the hide or leather at all points and also means whereby the direction of this strain may be equalized or changed as desired,  
 115 and this combination of pivoted clutch-holders and pivoted clutch is one of the important features of this invention.

The stationary cross-head  $b$  in both forms of construction may be secured to side frame  
 120 members  $a$  in any desired manner; but in the construction herein shown I employ lock-pins  $r$  for this purpose.

Having fully described my invention, what I claim as new, and desire to secure by Letters  
 125 Patent, is—

1. A leather-stretching apparatus, comprising parallel side members provided with two cross-heads one of which is stationary and the other movable longitudinally on said side mem-  
 130

bers, bars pivoted to said cross-heads and adapted to swing in a horizontal plane there-  
 over, clutch-holders pivotally connected with  
 said bars and adapted to swing in a horizon-  
 tal plane thereon, clutches adjustably mount-  
 ed on said bars, and a cross member connect-  
 ed with the side members between said cross-  
 heads and provided at its opposite ends with  
 clutches, substantially as shown and described.  
 2. A leather-stretching apparatus, compris-  
 ing parallel side members provided with two  
 cross-heads one of which is stationary and the  
 other movable longitudinally on said side  
 members, bars pivoted to said cross-heads and  
 adapted to swing in a horizontal plane there-  
 over, clutch-holders pivotally connected with  
 said bars and adapted to swing in a horizon-  
 tal plane thereon, clutches adjustably mount-  
 ed on said bars, and a cross member connect-  
 ed with the side members between said cross-  
 heads and provided at its opposite ends with  
 clutches, the clutches on said holders being  
 also adapted to swing in a horizontal plane  
 thereon, substantially as shown and described.  
 3. A leather-stretching apparatus, compris-  
 ing parallel side members provided with two  
 stationary cross-heads near the ends thereof,  
 a movable cross-head mounted on said side  
 members between said stationary cross-head  
 and adjacent to one of them, means for lock-  
 ing said movable cross-head to the side mem-  
 bers, a screw passing through one of the sta-  
 tionary cross-heads and through the adjacent  
 movable cross-head, bars pivoted to the mov-  
 able cross-head and to the stationary cross-  
 head at the opposite end of the side members  
 and adapted to swing in a horizontal plane

over said cross-heads, clutch-holders pivotally  
 connected with the last-named cross-heads,  
 clutches adjustably mounted on said clutch-  
 holders, a cross member connected with the  
 side members between the movable cross-head  
 and the stationary cross-head at the opposite  
 end of said side members and clutches pivoted  
 to the opposite ends of said cross member,  
 substantially as shown and described.

4. A leather-stretching apparatus, compris-  
 ing parallel side members provided at one end  
 with a stationary cross-head and at the oppo-  
 site end with a cross-head preferably longitu-  
 dinally thereof, means for moving the last-  
 named cross-head longitudinally of the side  
 members, locking devices for holding the mov-  
 able cross-head at any desired point, bars  
 pivoted to said cross-heads and adapted to  
 swing in a horizontal plane thereover, clutch-  
 holders pivotally connected with said bar and  
 adapted to swing in a horizontal plane there-  
 on, clutches adjustably mounted on said clutch-  
 holders and adapted to swing in a horizontal  
 plane thereon, a cross-head connected with  
 the side members between said cross-heads,  
 and clutches pivoted to the opposite ends of  
 said cross member, substantially as shown and  
 described.

In testimony that I claim the foregoing as  
 my invention I have signed my name, in pres-  
 ence of the subscribing witnesses, this 26th day  
 of August, 1904.

EZRA L. POST.

Witnesses:

F. A. STEWART,  
 C. J. KLEIN.