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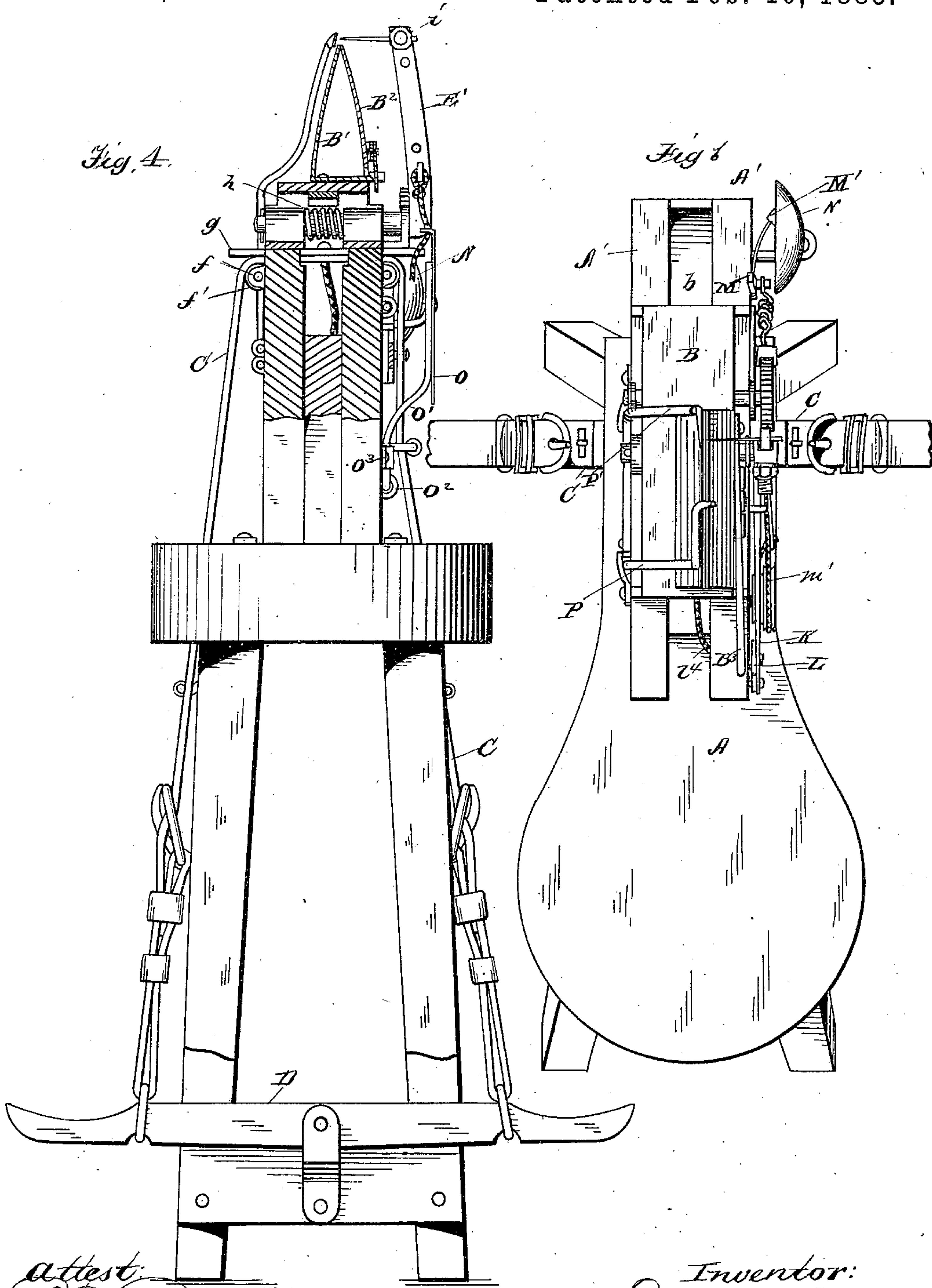
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J. F. BEST.

HARNESS MAKER'S STITCHING HORSE.

No. 312,073.

Patented Feb. 10, 1885.



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Inventor:  
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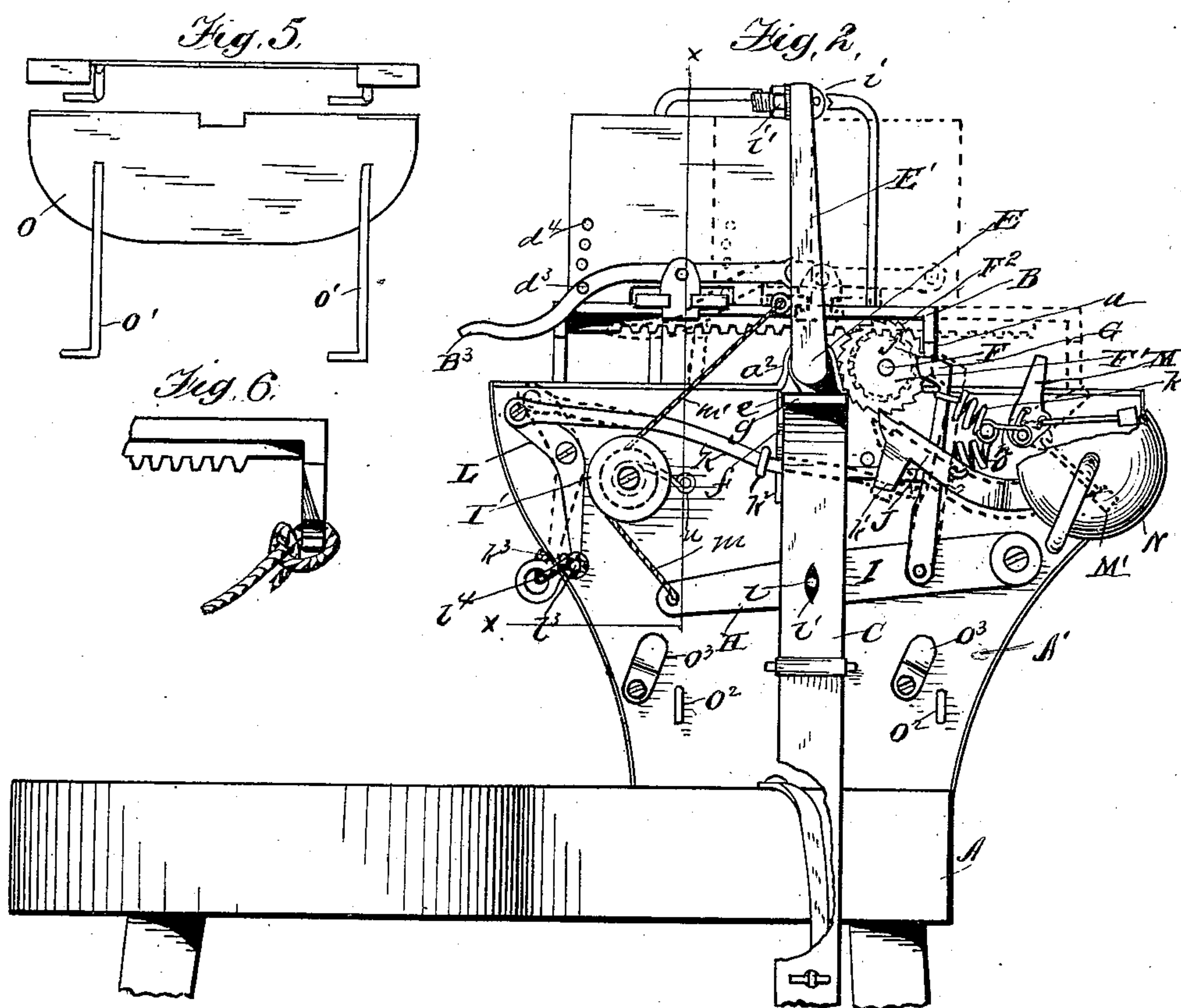
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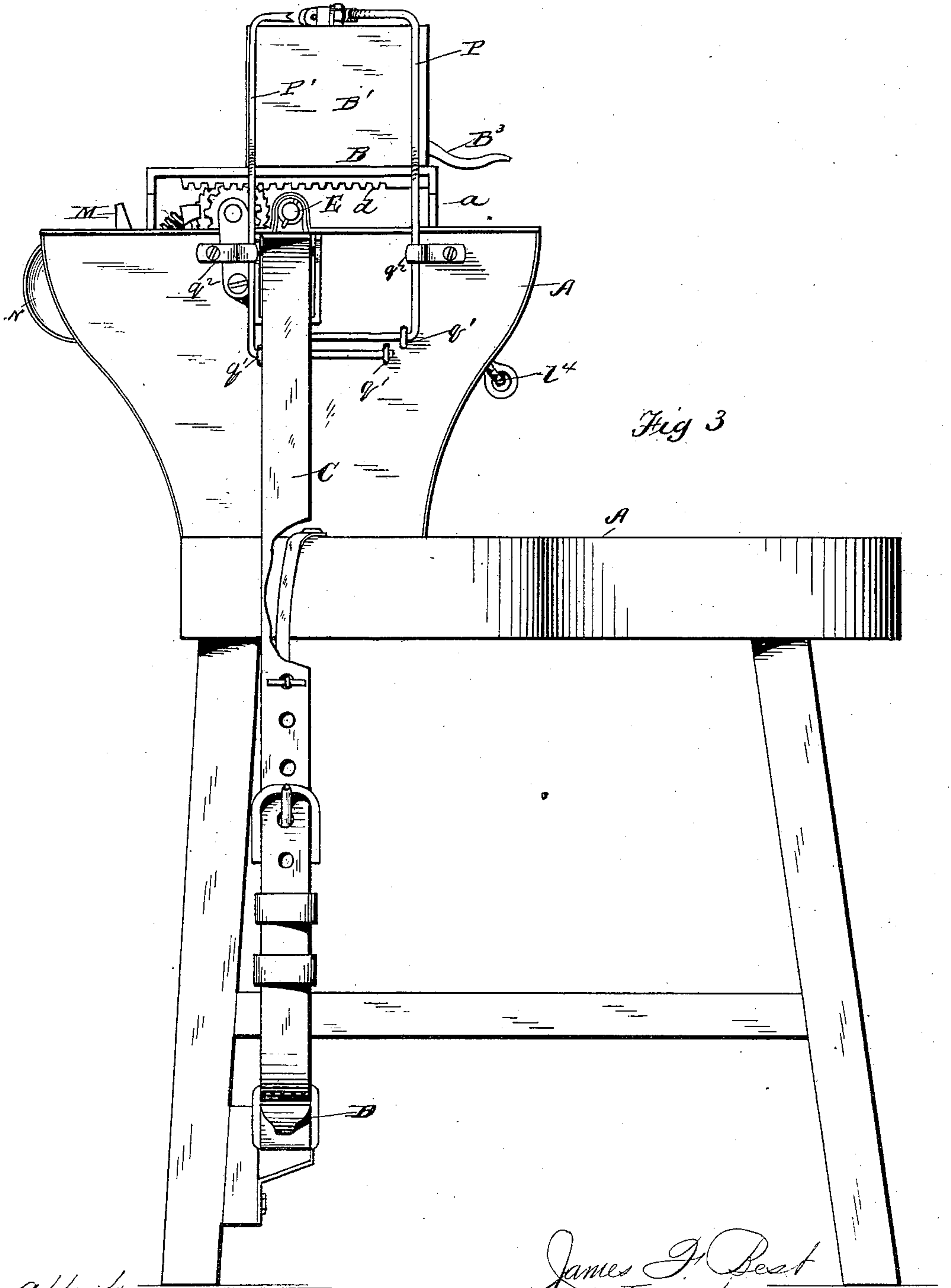


Fig 3

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# UNITED STATES PATENT OFFICE.

JAMES F. BEST, OF GALVA, ILLINOIS.

## HARNESS-MAKER'S STITCHING-HORSE.

SPECIFICATION forming part of Letters Patent No. 312,073, dated February 10, 1885.

Application filed November 23, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. BEST, a citizen of the United States, residing at Galva, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Harness-Makers' Stitching-Horses, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention pertains to improvements in harness-stitching horses, having for its object, among other things, to relieve the operator or workman of the labor and inconvenience of carrying and manipulating the awl in performing the stitching or sewing operation as practiced in the use of the ordinary stitching-horse; to secure uniformity in the length of the stitches as well as to produce them evenly and symmetrically, besides greatly facilitating the sewing or stitching operation, together with greatly lessening the labor of the operator or workman, the only work devolving upon the latter being the passing of the needle with the thread and the actuating of the treadle or lever, the latter being effected by the feet; and the invention consists of the sundry combinations of parts, substantially as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of my improved harness-stitching horse. Figs. 2 and 3 are opposite side views of the same, the side covering plate or apron being removed in one view to more fully expose the operative mechanism. Fig. 4 is a cross-sectional view of the work-clamp and the carriage, together with a portion of the bridge of the horse upon which the carriage travels. Figs. 5 and 6 are detailed views of parts of my improvements.

In the embodiment of my invention I support or secure upon a bench, A, of the usual construction, a block or bridge, A', which, together with the bench, constitute the "horse."

Upon the bridge A' of the horse is mounted, so as to travel back and forth thereon, the work-clamp carriage B, which consists of a plate with its ends bent or projecting downward, forming legs a, which rest upon ways or rails a', secured upon the top edges of the side walls of a longitudinal channel, b, made in

said bridge. The central portions of said legs a are extended downward into the channel b, and then laterally at each side into longitudinal grooves c in the side walls of the channel b, beneath and in contact with the under sides of said rails or ways a'. The underside of the carriage or plate B is provided at about its center in the direction of its length with a rack or series of teeth, d, the function of which will appear farther on.

Upon the carriage B is supported the work clamp or jaws B' B<sup>2</sup>, with their upper edges inclined toward each other, one being fixed or bolted at its lower divergent and inwardly-turned end to the carriage, while the other jaw is flexibly connected at its similarly-constructed end, as shown, or otherwise, to said carriage, and provided with a tongue, b', which fits in and passes through a slot, b<sup>2</sup>, in the base end or edge of the fixed or stationary jaw, said tongue projecting beyond the latter jaw and provided itself with a slot or recess, b<sup>3</sup>, in its free end, the function of which will be seen presently.

B<sup>3</sup> is a lever pivoted at one end to the fixed or stationary jaw, and having intermediately of its pivot and handle a pendent arm, d', which passes through the recess or slot b<sup>3</sup> of the tongue b', and which is provided in its side edges with notches d<sup>2</sup>, which receive the side edges of the slot b<sup>2</sup>, and thus effect a connection between said lever or ratchet, its arm, and the movable jaw.

From the foregoing it will be seen that the lever-arm d' does not of course pass through the tongue b' its entire width, being inserted into the slot b<sup>2</sup> sidewise. By actuating the lever B<sup>3</sup> the movable jaw can be adjusted with relation to the fixed jaw so as to vary the width of the space between said jaws to accommodate the thickness of the material or work to be interposed and held between them. The lever B<sup>3</sup> has a detent or detaining-pin, d<sup>3</sup>, which enters any one of the series of adjusting-apertures d<sup>4</sup> in the fixed jaw, according to the plane of adjustment of the lever.

C is a strap or other flexible connection, passing transversely through an opening or slot, e, in the bridge A' of the horse and over rolls f, preferably hung in open-ended frames



*f'*, fitted and secured in said slot or opening, one being disposed in each side of the latter. The ends of said strap C are looped and buckled or otherwise suitably fastened to a foot lever or treadle, D, pivoted about centrally to a cross-piece of the front legs of the horse, said looped portions of the strap being passed through staples fastened to said treadle or lever.

To the upper side of the strap C is riveted a plate, *g*, said plate being disposed in the upper part of the transverse slot *e* of the bridge of the horse, with its side edges guided under the rails *a'*, the latter being curved upward or arched at this point, as at *a''*, the purpose of which will presently appear.

Upon the plate *g* is supported, so as to reciprocate in eyes secured to said plate, a rock-shaft, E, which passes through the arched portions *a''* of the rails *a'*, and carries the awl bar or arm E', projecting upward from one end of said shaft contiguously to the work-clamp B' B'', and having an eye at its upper end about in line with the top edge of said clamp. The shaft E is encircled by or connected to a spring, *h*, also connected to the plate, to retain its arm E' flexibly in an upright position, whereby when said shaft is actuated, as hereinafter described, to depress or deflect the said arm subsequently to the action imparted thereto to puncture or perforate the leather or work, (which depression or deflection of said arm will move it out of the way of the workman in passing the needles with the threads through the perforations previously made by the awl carried thereby in the leather,) the said arm, carrying the awl, will automatically return to its original upright position preparatory to allowing the awl to again puncture or perforate the leather. At the upper end of the arm E' is an eye, which receives a threaded eye-bolt, *i*, being adjustably secured to said arm by a nut, *i'*, while within the eye of said bolt is held the awl, being clamped in place by turning the nut of said bolt in the required direction.

F is a transverse shaft journaled in eyes or supports fastened to the sides of the bridge A', near its upper edges. Said shaft is provided with a pinion or toothed wheel, F', gearing with the rack or teeth *d* of the carriage B, to actuate or cause the latter to traverse the rails *a'* of the bridge A', as hereinafter described. Upon one end of this shaft (which end projects slightly beyond one side of the bridge A') is secured a ratchet-wheel, F'', with which engages a propelling-pawl, G, which is provided upon the sides of its engaging point or edge with cheeks *j*, to prevent its accidental disengagement, which could only take place laterally, from the said ratchet-wheel. Said pawl is held in contact with said ratchet-wheel by the action of a spring, *k*, connected to the pawl G and to a stud projecting from that side of the bridge A'. The lower end of this lever is pivoted to the "driving"

lever H, pivoted at one end to the same side of the bridge A', and having a stud or projection, *l*, upon its outer side, which enters a slot, *l'*, in the strap C, whereby, upon exerting downward pressure in the usual way (by the foot) upon the treadle connected to said strap the free end of the lever will be depressed, which will cause the pawl G to actuate the ratchet-wheel F'', which in turn will rotate the shaft F and its pinion F', engaging with the rack *d*, and thus cause the work-carriage to have an intermittent traversing movement, which will effect the feeding of the work held by the clamp carried by said carriage to the plane of movement of the awl, permitting the latter to pass through it, which movement of the carriage will be in a direction away from the operator. The movement of the carriage, it will have been observed, takes place upon the return movement of the pawl, or after it has punctured or perforated the work and has been withdrawn therefrom. The free end of the lever H is connected by a cord, *m*, to the smaller face, I, of a cone-pulley supported upon an axis secured to that side of the bridge A', while the awl bar or arm is connected by a cord, *m'*, to the larger face, I', of said pulley, said cords being wound in opposite directions upon their respective pulleys, whereby it will be seen that upon actuating the treadle so as to effect the return movement or stroke of the awl-bar, which bar, it will have been noticed, has a to-and-fro movement in relation to the work-clamp, the cord *m'* and its pulley I' will depress said awl-bar for the purpose heretofore pointed out, and that upon the removal of said pressure from the treadle the cord *m* and its pulley I will lift or return said lever to its former position to repeat its previous action, as hereinbefore described.

In order to cause the cone-pulley I I' to act automatically in reversing its motion and to aid in returning or lifting the lever H to its former position after deflection or depression, the said pulley is acted upon by a spring, *n*, arranged upon its axis, and interposed between and connected to it and the bridge A'.

If desired, I may substitute for the cone-pulley I I' a short lever, pivoted at one end to the bridge and connected to the needle-bar and lever H, the latter having a spring, by cords, the cord connecting with the needle-bar being secured to said lever at its forward end, while the cord connected with the lever H is secured thereto at about its middle, as is obvious.

J is a holding-pawl pivoted to the bridge A' at one side and held in engagement with the ratchet-wheel F'' by a spring, *q*, connected to said pawl and to the bridge, said pawl having a loop, *k'*, through which passes a lever, K, sliding and supported in a keeper, *k''*, also secured to the bridge. One end of this lever is adapted to press against the propelling-pawl G when acted upon by the hand, while its other portion is curved upward and piv-



oted to the upper end of a bent lever, L, pivoted to the bridge A' at the same side thereof, and limited in its movement by stops  $l^3$ , projecting from the bridge A'. The lower or  
 5 free end of the lever L is provided with a lateral stud,  $l^3$ , upon which the action of the finger may be exerted to actuate said lever to disengage the propelling and holding pawls from the ratchet-wheel F<sup>2</sup>, as is required when  
 10 the carriage has reached the end of its movement, and the same is to be returned to its first position.

To the lever L or its said stud or finger-piece  $l^3$  is connected a cord or line,  $l^4$ , the opposite end of which is connected to the forward end of the carriage, said end of cord being passed through an aperture in the central downwardly-projecting portion of the leg at that end of carriage and tied upon itself.  
 20 This cord is of such length or so adapted that when the carriage reaches the end of its movement it (the cord) will be drawn taut, and thus pull upon the lever L, which will have the same effect (differing from that, however, in  
 25 being exerted automatically) upon the propelling and holding pawls G J through the lever H as the action above described of the finger upon the stud or finger piece  $l^3$ —namely, the disengagement of said pawls from the  
 30 ratchet-wheel F<sup>2</sup>, whereby the jamming and liability of the impairing or breaking of the parts will be prevented should direct action upon the treadle or strap not instantly be arrested. It will be observed that said automatic action of the line upon the carriage will  
 35 effect the stopping of the movement of the carriage also automatically.

Pivoted to one side of the bridge A', at a point a little inward from the stopping-point  
 40 of the carriage B, and standing in the plane of travel of the latter, is a lever or cam, M, provided with a hammer, M', and held under the action of a spring,  $p$ , preferably wound around the pivot of said lever or cam.

N is a gong or bowl, which, together with the hammer, M', constitutes a bell, said bowl or gong being supported upon a bracket or arm connected to the bridge A', and suitably adapted to hold said bowl or gong intact with  
 50 said bridge and contiguously with its said hammer. It will be seen that upon contact of the carriage with, or as it passes the lever or cam M, when nearly completing its movement, the spring  $p$  will suddenly spring or return the same to its previous upright position, when the hammer M' will strike and sound the gong or bell, giving notice to the operator of the fact of the completion by the carriage of its movement, advising him when  
 60 to cease action upon the treadle without requiring any previous manipulation upon his part. The forward end plate or leg,  $a$ , of the carriage B is beveled upon that edge on the inner side which has contact with the lever  
 65 or cam M, in order that it may readily pass the latter with the least possible friction, said cam escaping laterally from said leg as the

carriage is returned to its most forward position to begin operation. That portion of the mechanism disposed upon one side of the  
 70 bridge may be and is protected as far as possible and permit of the action thereof by an apron or plate, O, arranged in front thereof, and with pendent arms O', having projections bent in the same direction, which enter staples or keepers O<sup>2</sup>, secured to the bridge A'.  
 75 Buttons or bent plates O<sup>3</sup>, pivoted to said bridge adjacently to said keepers or staples, hold the apron in place.

Upon the opposite side of the bridge A' are  
 80 disposed and held thereon the two bent bars or rods, one, P, being the channel-opener, and the other, P', being the needle-guide, as well as serving as a work-support. Said needle-guide and channel-opener are bent inwardly  
 85 and toward each other at their lower ends, where they enter keepers or eyes  $q'$ , secured to the bridge A', being held in an upright position by buttons or plates  $q^2$ , pivoted to said bridge. The needle-guide P' is so disposed or  
 90 constructed as to cause its upper end to stand directly in a plane a little in front of the needles and contiguously to the work-clamp, and having a notch in said end to guide the needle in sewing the work, said end of needle-guide  
 95 also serving to support the leather or work as against the action of the awl. The upper end of the channel-opener P is disposed also contiguously to but in rear of the plane of movement of the awl and directly above the work-  
 100 clamp, its extreme free end being adapted to open the channel as the clamp with the work is moved forward.

Besides the advantages previously set forth in behalf of my invention, it also enables the operator to maintain at all times his original position, not being required to lean or stretch forward as in the use of the ordinary stitching-horse as the stitching or sewing operation advances, since this operation in my machine is always performed at the same point, the work being moved in position to the awl and needles and not the hand or the latter to the work. Furthermore, it will be also observed that while the threads are being drawn by the hands the  
 115 next puncture can be made by the action of the feet upon the treadle, thus saving the time heretofore consumed to locate the point of the awl in the proper place and position which required the close application of the eye, and  
 120 to force the awl through the work and to withdraw it.

In order to govern or vary the length of the stitches it is only necessary to exchange the carriage-operating pinion for a pinion having  
 125 a different number of teeth, the plan adopted being to provide the pinion with a certain number of teeth to the inch, or each of a number of pinions with a different number of teeth to the inch, the stroke of the awl-bar, and consequently the length of the prospective stitches,  
 130 being proportionate to the intervals the teeth are spaced apart.

Modifications in details of construction and



form and proportion of parts herein shown and described as an embodiment of my invention may be made without departing from the principle or sacrificing the advantages thereof, and I would therefore have it understood that I hold myself at liberty to make such changes and alterations as fairly fall within the scope of my invention.

No claim is herein made to the combination in a stitching-horse of the work-clamp having the waved staple-like device with supplementary spring-seated awl-bar having an arm resting upon said waved staple-like device, as such will form the subject-matter of a future application.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a stitching-horse, the combination, with the work-clamp, of the treadle-strap plate carrying a shaft with its arm held in a flexibly upright position, together with a line to effect the depression of said lever, substantially as and for the purpose set forth.

2. In a stitching-horse, the combination, with the plate or support carrying the shaft having the awl-bar or arm, of the treadle-strap having intermittent movement transversely through the bridge of the horse, substantially as and for the purpose set forth.

3. In a stitching-horse, the shaft having an arm carrying the awl, said shaft being supported upon a plate of the treadle-strap, in combination with a spring acting upon said shaft to hold its said arm in an upright flexible position, and a line acting to deflect or depress said arm, substantially as and for the purpose described.

4. In a stitching-horse, the combination, with the work-clamp carriage, of the driving-lever having a pawl to propel the ratchet-wheel of the actuating-shaft of the carriage, said lever being acted upon by the treadle-strap, substantially as and for the purpose set forth.

5. In a stitching-horse, the combination, with the work-clamp carriage, of the driving-lever having a pawl to engage a ratchet-wheel upon the shaft geared to said carriage, said lever having a projection or stud entering a slot in the treadle strap, substantially as and for the purpose described.

6. In a stitching-horse, the work-clamp carriage, in combination with the supplementary lever acting upon the propelling and holding pawls of the ratchet-wheel of the driving-shaft of the carriage, to disengage them from said ratchet-wheel, substantially as and for the purpose set forth.

7. In a stitching-horse, the work-clamp carriage, in combination with the supplementary lever acting upon the propelling and holding pawls of the ratchet-wheel of the carriage-

driving shaft, to disengage said pawls from said ratchet-wheel, said lever being connected to a second lever, with one end provided with a finger-piece or lug, substantially as and for the purpose set forth.

8. In a stitching-horse, the work-clamp carriage, in combination with the supplementary lever acting upon the propelling and holding pawls of the ratchet-wheel of the carriage-driving shaft, said lever passing through an eye of the holding-pawl and connected to a second lever connected to the distant or forward end of the bridge of the horse, substantially as and for the purpose set forth.

9. In a stitching-horse, the driving-lever carrying a pawl engaging with a ratchet-wheel of the carriage-driving shaft and the awl-bar or arm carried by a rock-shaft, in combination with the spring cone-pulley, with one face thereof connected by a line to said awl-bar, and the other face of said pulley connected also by a line to said driving-lever, substantially as and for the purpose set forth.

10. In a stitching-horse, the combination, with the work-clamp carriage, of the cam or lever disposed in the line of travel of said carriage and actuating the hammer of the gong or bell, substantially as and for the purpose set forth.

11. In a stitching-horse, the combination, with the work-clamp carriage, of the lever or cam disposed in the line of travel of said carriage and the gong or bell hammer, said carriage having at the point of contact therewith of said cam or lever a beveled edge, substantially as and for the purpose set forth.

12. In a stitching-horse, the combination, with the work-clamp, of the awl or needle guide comprising a bent rod with its upper end notched and disposed slightly in front of the plane of movement of the awl, substantially as and for the purpose described.

13. In a stitching-horse, the combination, with the work-clamp, of the channel-opener consisting of the bent rod with its upper end disposed directly over said clamp and slightly in rear of the traveling movement of the awl and opening the work, substantially as and for the purpose described.

14. In a stitching-horse, the work-clamp comprising the stationary jaw and a flexibly-seated jaw having a tongue fitting in and projecting through a slot in the base of the stationary jaw, in combination with a lever connected to the latter jaw and to the projecting end of said tongue of the flexibly-seated jaw, substantially as and for the purpose described.

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

JAMES F. BEST.

Witnesses:

GEO. W. HOUGH,  
WM. L. WILEY.