No. 696,717. Patented Apr. 1, 1902.

J. CAVANAGH, Jr.

LASTING MACHINE.

(Application filed Apr. 21, 1900.)

(No Model.) 3 Sheets—Sheet 1.

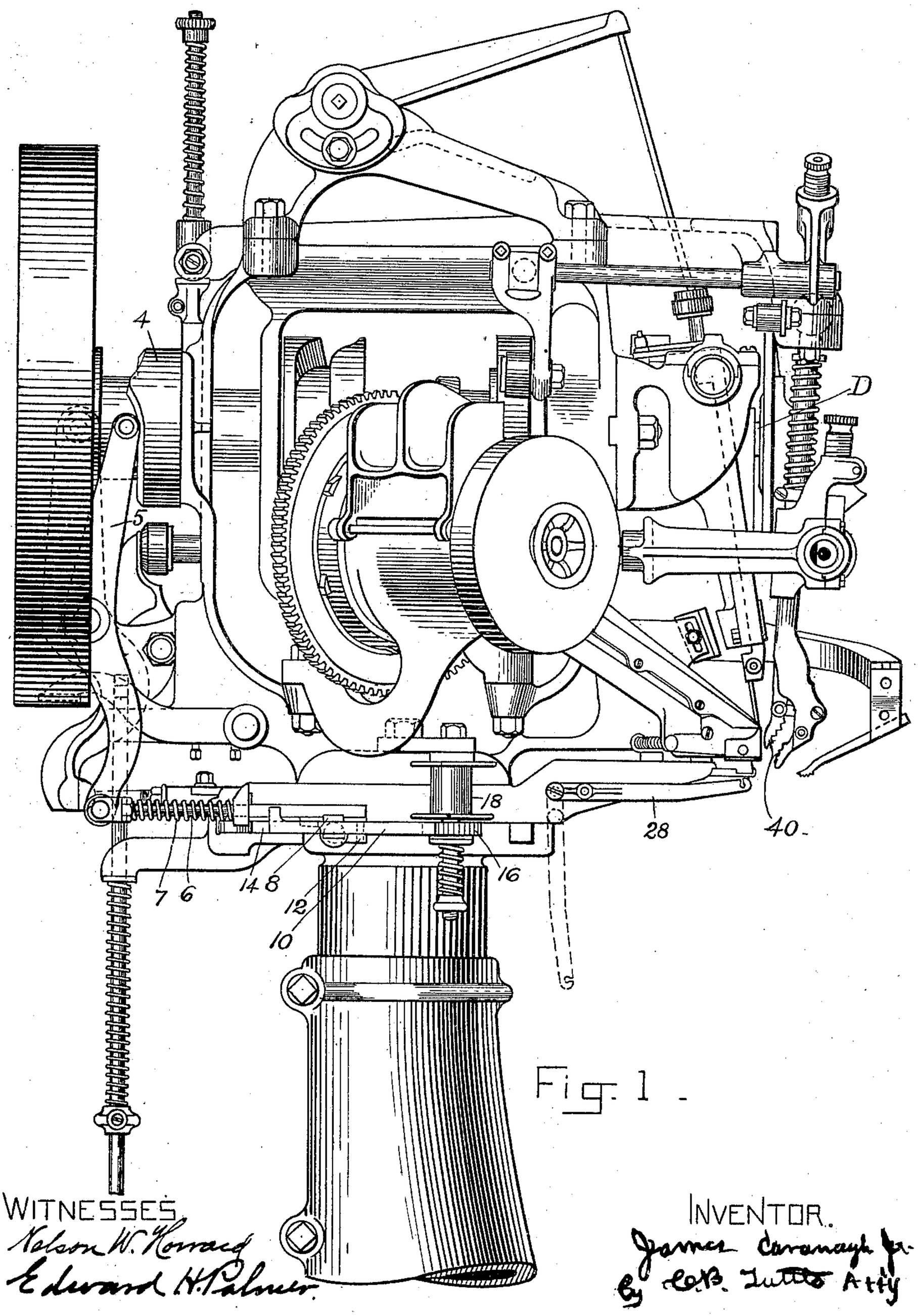

Fig. 1.

WITNESSES.
Nelson W. Howard
Edward H. Palmer

INVENTOR.
James Cavanagh Jr.
By C.B. Tuttle Atty

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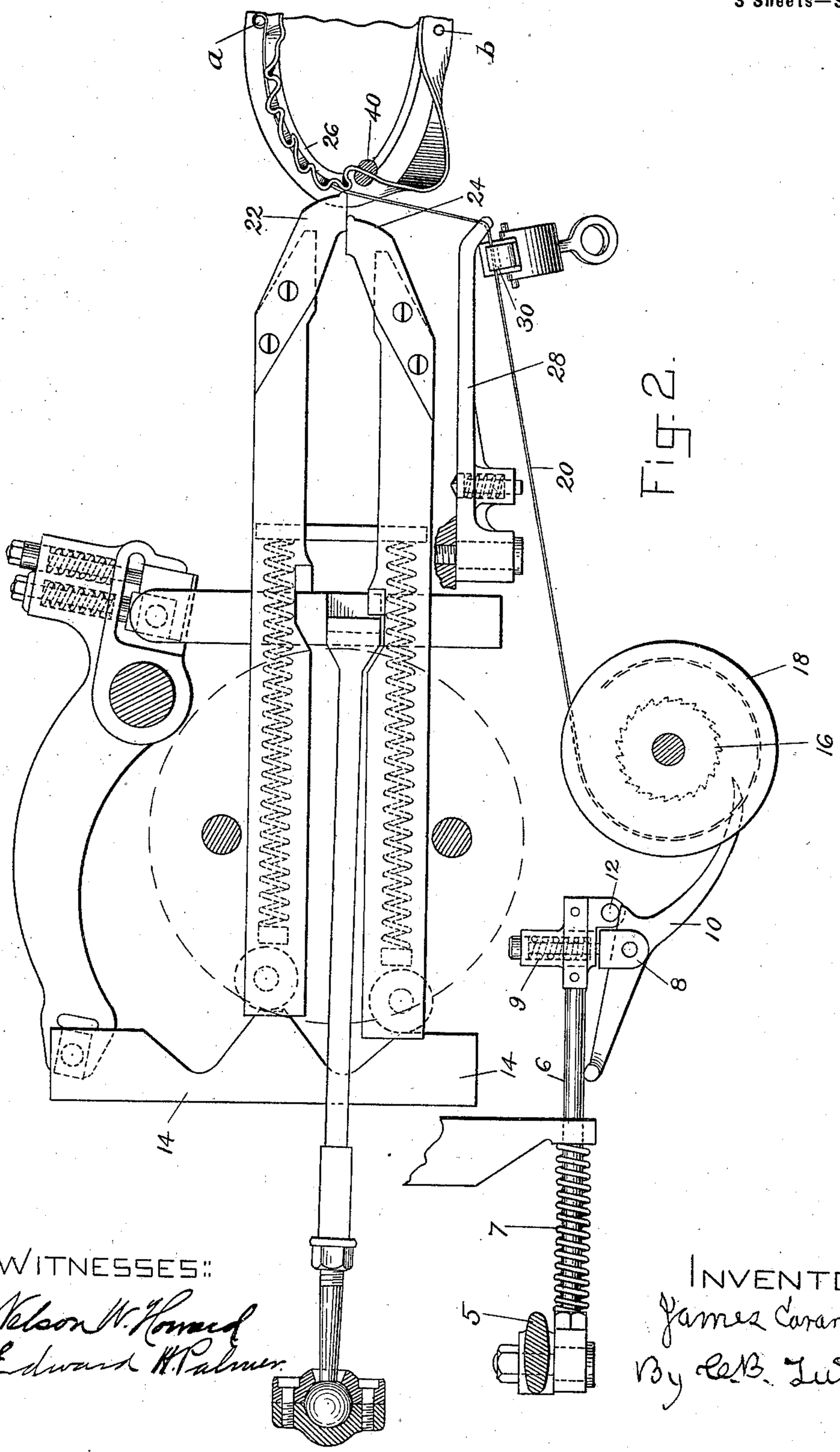

Fig. 2.

WITNESSES:

Nelson W. Howard

Edward H. Palmer.

INVENTOR:

James Cavanagh Jr.

By C. B. Tuttle Atty

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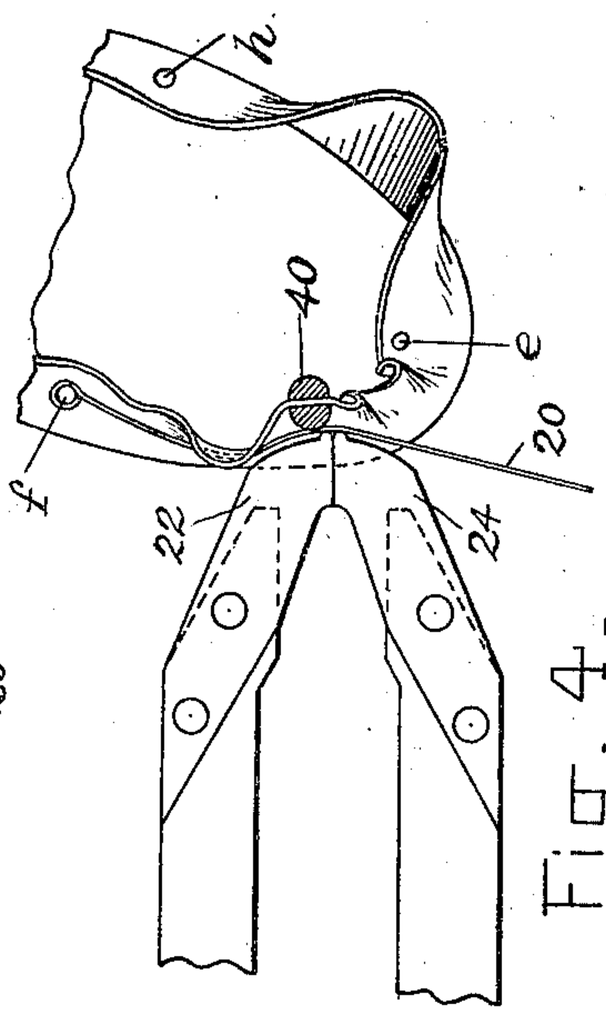

Fig. 4.

Fig. 3.

WITNESSES::

Nelson W. Howard

Edward H. Palmer.

INVENTOR..

James Cavanagh Jr.

By L. B. Tuttle

Atty

UNITED STATES PATENT OFFICE.

JAMES CAVANAGH, JR., OF BROCKTON, MASSACHUSETTS, ASSIGNOR TO THE UNITED SHOE MACHINERY COMPANY OF THE STATE OF NEW JERSEY, OF BOSTON, MASSACHUSETTS.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 696,717, dated April 1, 1902.

Application filed April 21, 1900. Serial No. 13,754. (No model.)

To all whom it may concern:

Be it known that I, JAMES CAVANAGH, Jr., of Brockton, county of Plymouth, State of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following, read in connection with the accompanying drawings, is a specification.

This invention is shown and described in the present instance in connection with the lasting-machine of United States Letters Patent No. 584,744, to which reference is had for matters not herein specifically set forth.

Of the drawings, Figure 1 is a side elevation of the machine embodying this invention. Fig. 2 is a plan of the machine parts which are most directly connected with this invention. Figs. 3 and 4 are also plan views of parts shown in Fig. 2, said views 2, 3, 4 representing the parts in different operative positions.

On the main shaft D of the machine represented in Fig. 1 is a cam 4, by which motion is imparted through the lever 5 to effect movement of rod 6 endwise against the tension of spring 7, which spring 7 reversely moves the rod 6 when permitted by cam 4 and at all times keeps the power-transmitting lever 5 and cam 4 in suitable juxtarelation. The part 8 has its shaft-section arranged in the head end of rod 6 for movement endwise against the tension of spring 9. It pivotally supports the pawl 10, which pawl has bearing on the stud 12. Pawl 10 is actuated pivotally by the slide 14 for engagement with ratchet 16 and is then advanced by the rod 6 for turning said ratchet, and consequently the reel 18, to which said ratchet is attached, all as referred to hereinafter. Reel 18 is employed for holding the wire 20.

Reference now being had to the above-cited United States Letters Patent No. 584,744, it will be observed that in the machine of that patent the boot or shoe is prepared for lasting by putting the last in suitable position relatively to the upper material, lining, &c., and overdrawing the toe and side portions of said material at the ball of the last and securing such overdrawn parts with tacks or other suitable fastenings, which to that end are located and driven through said material and the shoe inner sole, one in each of said places, a portion of said tacks being left projecting as a convenient take-hold for removing said tacks after the lasting operation has been fully performed. A single pair of pincers 40 is employed, and the shoe is held by the workman and turned about for presenting the different parts of the upper to the pincers at different times. Said machine also comprises mechanism for supplying and driving tacks, whereby the part or section of upper material acted upon by the machine at one time is secured in place upon the inner sole preliminary to the next operation of the machine, the lasting operation as a whole being carried out progressively by repeated operations of the machine applied to different parts of the upper at different times. It may be pointed out here as one purpose of this invention to employ the said wire 20 in place of said tacks for holding the upper material in place when lasting certain parts, more particularly the toe parts of boots and shoes. To this end the workman fastens the outer free end of wire 20 to tack *a*. The machine being then started, each successive part of the upper is manipulated into place and held temporarily by the binding strain of said wire until by repeated operations of the machine the whole toe part of the shoe is thus lasted around to the tack *b*, whereupon the wire 20 is cut and fastened around said tack *b*. Pressers 22 24 are employed for pressing the material into place against the welt-rib 26. For description of the construction of said pressers and actuating connections therefor see said Patent No. 584,744. It may be noted here that in the operation of the machine one of said pressers remains stationary against the upper, while the other moves backwardly and then forwardly to press the adjacent section of said upper into place, after which the wire operates for holding the said lasted toe portion of the boot or shoe until the after operation of sewing is completed. Thereupon the wire is removed, and with it the tacks *a b*. The binding tension of the wire is maintained during the machine's operations by causing it to run through a gripper device 30. It is to be observed that in the lasting operations as carried out with this invention, as repre-

sented in the present instance, different parts of the upper are manipulated successively into place and simply bound there by the wire 20. Said parts of the upper may be manipulated repeatedly wherever the occasion requires it without weakening the material, as might be the result of such repeated operations when tacks and similar puncturing fasteners are employed. During such operations of the machine as take place while the wire-placing mechanism is operative I put a peg in the channel-groove of the tack-feeding block, whereby tacks are stopped from passing to the driving mechanisms and the normal action of the machine to fasten the upper with tacks is prevented.

By the method of lasting described above the toe part of the boot or shoe is lasted progressively in one direction from the tack *a* to the tack *b*, Fig. 2, and this operation has been proved to yield most admirable results; but I am aware that by many it is deemed essential to begin the toe-lasting operations at the point *e*, Figs. 3 and 4, which is approximately near the median longitudinal line of the last, and from this point to continue the lasting operations in opposite directions, and this invention is adapted for carrying out the lasting operations according to such plan whenever it is thought desirable so to do. To this end the wire 20 is secured, as above described, to the tack *f*, Figs. 3 and 4, enough wire being reeled off to allow of the boot or shoe being presented to the upper manipulating members, so that the lasting operations begin at one side of the tack *e*, from which point the material is manipulated in sections progressively toward the tack *f*. In this connection it becomes necessary to take up the slack in wire 20 that results from turning the shoe, and consequently moving the tack *f* step by step nearer to the reel 18. For this purpose motion is imparted from the cam 4 through lever 5, rod 6, and pawl 10 for backwardly turning the reel 18, as is required in order to keep the proper tension of said wire 20. In carrying out these operations from tack *e* to tack *f* the upper is manipulated into place progressively by operations of the pincers 40 and pressers 22 24 without any particular binding action of the wire 20. The shoe is then moved back to the starting-point or tack *e*, during which the said manipulated sections of upper are drawn into place and tightly bound by the wire 20 from the point or tack *e* to the point or tack *h*. The lasting operations are carried out in the manner first above described, the different parts of the upper being manipulated and then bound progressively and finally bound by securing the wire 20 to said tack *h*.

In order to facilitate the understanding of this invention, it may be pointed out here (a fuller description being found in the Patent No. 584,744, above referred to) that the presser 24 is allowed to remain stationary and the presser 22 is caused to move for the operations of lasting the toe part of the shoe-upper from the point or tack *e* to the tack or point *f*, and during this time the slide 14 is in position against the pawl 10 (see Fig. 3) for holding it in engagement with ratchet 16, and consequently forcing the operations of cam 4, lever 5, rod 6, and pawl 10 to effect the above-described step-by-step movements of reel 18 for taking up the slack of wire 20. In the operations of lasting from point or tack *e* to the point or tack *h* presser 22 is allowed to remain stationary and presser 24 is caused to move. In the operation of the mechanism whereby this change in the action of pressers 22 24 is carried out slide 14 is moved endwise to a position, Fig. 2, where it stands remote from pawl 10. Said pawl then assumes the position shown in Fig. 2, where it remains out of engagement with ratchet 16 during the operations of lasting from tack *e* to tack *h*, there being then no back-slacking of wire 20, and consequently no taking-up movement of reel 18. Further, in the machine represented, as more fully described in said Patent No. 584,744, said pressers 22 24 are brought into and out of action by the workman at will. Hence it is that by starting at the point or tack *a*, Fig. 2, and putting the pressers into operation, with the presser 22 remaining stationary, the workman is able by this machine to last progressively in one direction from said tack *a* to the point or tack *b* in the manner first above described. The wire-holder 28 is pivotally supported in order that when not in use it may be turned back out of the way and give place for other members of the machine to operate.

I claim—

1. A machine comprising grippers and means for actuating them to work an upper over a last, combined with means for superimposing wire or a similarly continuous material on said upper over-worked by said grippers to secure the upper on the last.

2. A machine comprising means for working an upper over a last, combined with means for placing wire or a similarly continuous material in binding relation with said over-worked upper, said wire-placing means being inoperative during a portion of the operations of the machine.

3. A machine for working an upper over a last including separate means for over-working the toe portion of said upper, said means being arranged to operate upon different parts of the upper successively in repeated operations of the machine, combined with means for placing wire or a similarly continuous material in binding relation with said toe portion.

4. A lasting-machine adapted to manipulate different parts of the upper successively in repeated operations of the machine, comprising means for superimposing wire or a similarly continuous material in binding relation with said successively-manipulated parts of said upper.

5. A lasting-machine adapted for manipulating different parts of an upper successively in repeated operations of the machine, comprising means for holding wire or a similarly continuous material in bulk, take-up and tension devices therefor, and means for superimposing said wire progressively in binding relation with said successively-manipulated parts of said upper.

6. A lasting-machine adapted to manipulate different parts of an upper successively in repeated operations of the machine, comprising means for placing wire or a similarly continuous material in position for holding said successively-manipulated parts of said upper, and means for suspending said wire-placing operations during a number of repeated operations of said machine.

7. A lasting-machine adapted for manipulating different parts of an upper successively in repeated operations of the machine, comprising means for superimposing wire or a similarly continuous material in position for holding said successively-manipulated parts of said upper, said means being normally inoperative and put into operation as desired during the lasting process.

Signed by me this 17th day of April, 1900.

JAMES CAVANAGH, JR.

Witnesses:

NELSON W. HOWARD,

EDWARD H. PALMER.