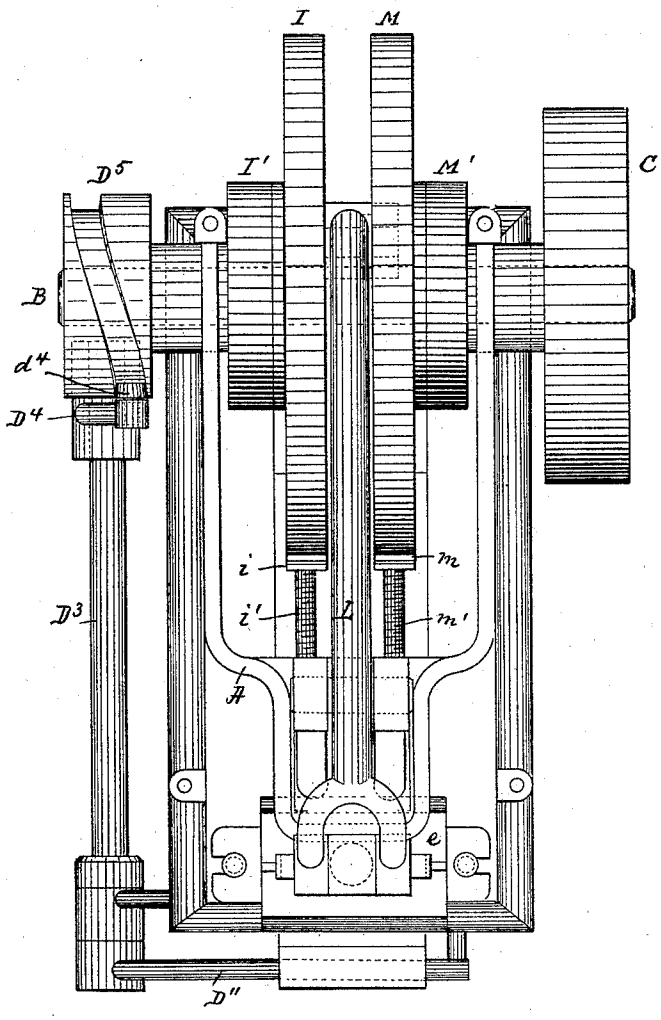
(No Model.) 5 Sheets—Sheet 1.

E. H. TAYLOR.

HEEL MAKING MACHINE.

No. 475,714. Patented May 24, 1892.

Fig. 1.



Witnesses.

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(No Model.) 5 Sheets—Sheet 2.

E. H. TAYLOR.

HEEL MAKING MACHINE.

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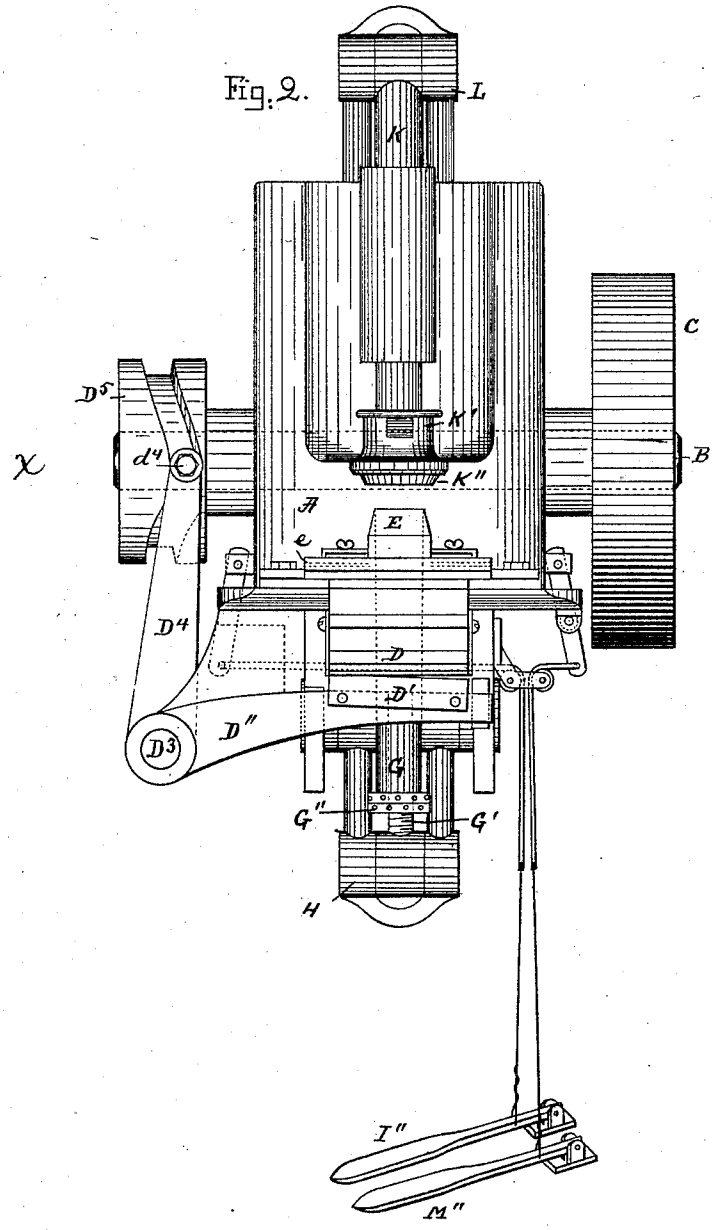
Fig. 2.



Witnesses.

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(No Model.) 5 Sheets—Sheet 3.

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HEEL MAKING MACHINE.

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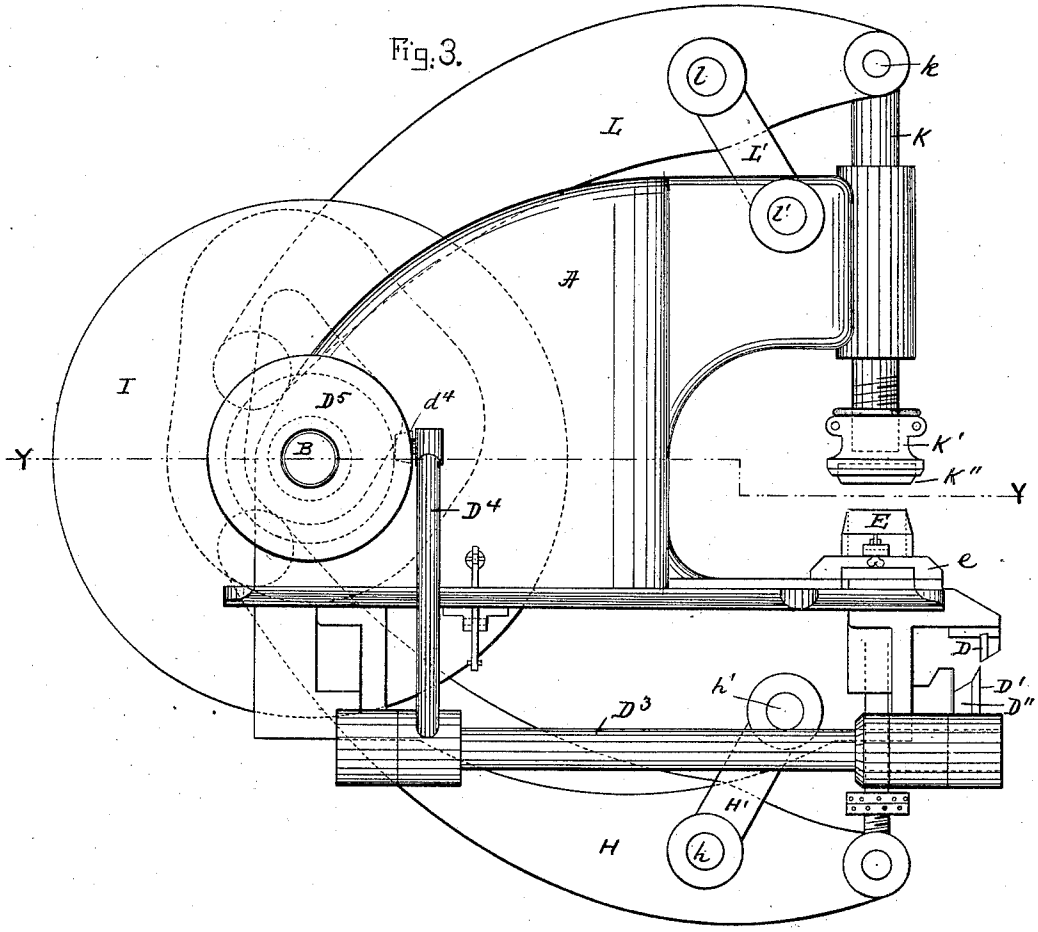
Fig. 3.



Witnesses

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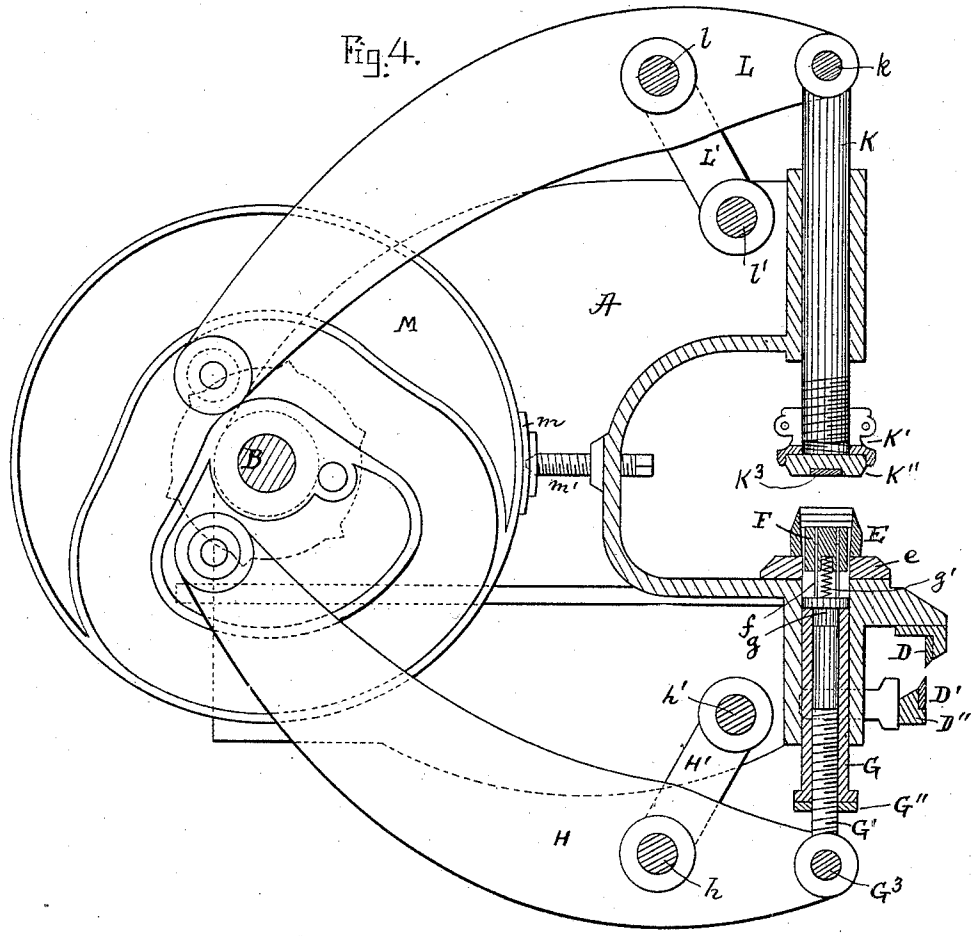
No Model.) 5 Sheets—Sheet 4.

E. H. TAYLOR.

HEEL MAKING MACHINE.

No. 475,714. Patented May 24, 1892.

Fig. 4.



Witnesses

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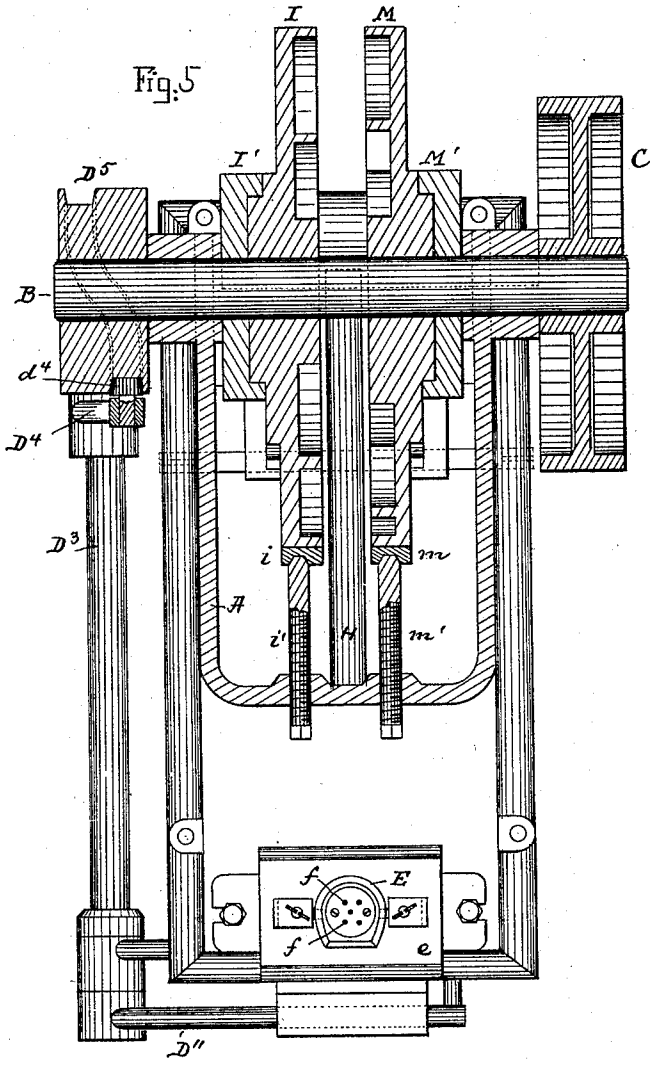
(No Model.) 5 Sheets—Sheet 5.

E. H. TAYLOR.

HEEL MAKING MACHINE.

No. 475,714. Patented May 24, 1892.

Fig. 5



Witnesses.

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Alice A. Perkins.

Inventor.

Eugene H. Taylor

by Albert Andrews

his atty.

UNITED STATES PATENT OFFICE.

EUGENE H. TAYLOR, OF LYNN, ASSIGNOR TO JOHN Q. A. WITTEMORE, OF BOSTON, MASSACHUSETTS.

HEEL-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 475,714, dated May 24, 1892.

Application filed February 18, 1892. Serial No. 422,013. (No model.)

To all whom it may concern:

Be it known that I, EUGENE H. TAYLOR, a citizen of the United States, and a resident of Lynn, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Heel-Making Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in heel-making machines for the purpose of dieing out and nailing heel-lifts together, and it is carried out as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a top plan view of the machine. Fig. 2 represents a front elevation of the same. Fig. 3 represents a side elevation seen from X in Fig. 2. Fig. 4 represents a central longitudinal section of the machine, shown partly in elevation; and Fig. 5 represents a horizontal section on the line Y Y shown in Fig. 3.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

A is the head or frame of the machine, in suitable bearings in which is journaled the driving-shaft B, which is set in a continuous rotary motion by means of belt-power applied to the pulley C, which latter is secured to the said driving-shaft.

The machine is provided with an automatically-operated cutting device for the purpose of trimming the pieces of leather previous to placing them on top of the die which is used in the machine. The said cutting device is constructed and operated as follows:

To the front of the machine is secured a stationary knife or cutter-blade D, as shown in Figs. 2, 3, and 4.

D′ is the movable knife or cutter, which is secured to a rocker-arm D″, attached in its outer end to a shaft D^3, located in bearings on the frame A. To the rear end of said shaft D^3 is secured an arm or lever D^4, having a pin or pin and roll d^4, which is actuated by means of a grooved cam D^5, secured to the driving-shaft B, and it will thus be seen that a rocking shearing motion is imparted automatically to the cutter-blade or knife D′ from the rotary driving-shaft B.

E is the stationary die, having an upper cutting-edge corresponding to the shape of the heel that is being made. Said die is secured in a suitable manner to a base-plate *e*, resting on and secured to the forward part of the frame A. Within the die E is loosely arranged the follower F, having vertical perforations for receiving the nails and the drivers *f f*, which latter are supported in their lower ends upon the driver-block *g*, that rests on the upper end of the plunger G, which is guided in a bearing on the frame A, as shown in Fig. 4. The said plunger G is adjustably connected to the forward end of the rock-lever H, preferably by means of a screw-threaded rod G′, working in an internal screw-thread in the plunger G, and provided with a check-nut G″ for securing said rod to the plunger after said parts have been properly adjusted relative to the height of the heels that are being made.

The screw-rod G′ is pivoted at G^3 to the forward end of the rock-lever H. The follower F rests loosely upon a suitable spring or yielding cushion *g′*, interposed between said follower and the driver-block *g*, as fully shown in Fig. 4.

By the upward motion of the plunger G and its driver-block the nails are driven through the heel, clinched against the anvil above the die, and thrown out of the latter after the nails are driven and clinched.

An up-and-down vertical motion is imparted to the plunger G at the will of the operator by means of a face-cam I, loosely journaled on the driving-shaft B and provided with a cam-groove adapted to receive a pin or pin and roll on the end of the lever H. The said lever H is pivoted at *h* to a movable link H′, the upper end of which is pivoted at *h′* to the frame of the machine.

By pivoting the lever H to a movable link H′, as described, I am enabled to cause a vertical linear motion to be imparted to the plunger G and its connections by the rocking motion of the said lever H.

Above the die E is arranged the vertically-

movable plunger K, which is guided in a bearing in the frame A, as shown in Fig. 4. To the lower end of said plunger is adjustably secured the block-holder K′, that carries the metal block K″.

K^3 is a steel anvil or clinching-face secured to the middle of the block K″, and said anvil serves as a clinching-surface for the upper ends of the nails during the driving and clinching operation.

The upper end of the plunger K is pivoted at *k* to the rock-lever L, which is hung at *l* on a link L′, the lower end of which is pivoted at *l′* to the frame A, as fully shown in Fig. 4.

An up-and-down vertical motion is imparted to the plunger K and its connections at the will of the operator by means of a face-cam M, loosely journaled on the driving-shaft B, and having a cam-groove adapted to receive a pin or pin and roll on the end of the lever L. By pivoting the lever L to a movable link L′, as described, I am enabled to cause a vertical linear motion to be imparted to the plunger K and its connections by the rocking motion of the said lever L.

I′ and M′ are clutches secured to the driving-shaft B and adapted to engage with the respective cams I and M at the will of the operator by depressing, respectively, the treadles I″ and M″. Thus by depressing the treadle I″ the clutch I′ will cause one complete revolution to be imparted to the cam I and the depression of the treadle M″ will cause a complete revolution to be given to the cam M.

In nailing, driving, or punching machines well-known mechanism is used for imparting one complete revolution to the driving-shaft by the depression of a treadle or the movement of a hand-lever, and any such well-known mechanism may be used for imparting from time to time a complete revolution to the cams I M without departing from the essence of my invention. I have therefore not shown in detail the connection between said treadles and their clutches, as such clutch device and mechanism form no part of my present invention, it being only necessary to impart a complete revolution to the cam I every time a heel-lift is being died out, and also to impart a complete revolution to the cam M during the nailing, driving, and clinching of the heel.

i and *m* are adjustable brakes adapted to bear, respectively, against the peripheries of the cams I and M, so as to cause a frictional resistance against said cams, and thereby to prevent their being carried by their momentum beyond a complete revolution after being acted upon by their respective clutches.

i′ and *m′* are adjusting-screws, by means of which the pressure of the brakes *im* against their cams may be regulated.

The machine is applicable for making heels from solid lifts or from pieces of leather smaller than whole-heel lifts, as may be desired.

In making pieced heels the operator trims the meeting edges of the pieces by placing the piece between the stationary and movable shears D D′, causing a straight edge to be cut on the heel-lift piece where it is to join another piece in the dieing out of heel-lifts.

The operation of the machine is as follows: Nails are first placed in the perforations in the follower F, with their lower ends resting in the upper ends of the drivers *f f*. The plunger K is normally held in its highest position and the plunger G in its lowest position. Rotary motion is applied to the pulley C, causing the shaft B, its clutches I′ M′, and cam D^5 to be continuously rotated and causing an oscillating motion to be imparted to the movable knife D′. The operator then takes a piece of leather and places it on top of the die E, after which he depresses the treadle M″, causing the cam M to make one complete revolution, by which the block K″ on the plunger K is forced against the leather and the cutting-edge of the die causing a heel-lift to be cut out and forced into the die against the yielding follower F, after which the plunger K returns to its upper normal position. This is repeated until sufficient number of lifts have been died out and forced into the die to form a heel of the desired thickness. As the lifts are being forced downward into the die, the nails are caused to penetrate one or more of the lifts, as may be desired, so as to facilitate the subsequent driving and clinching operation. After the desired number of lifts have been forced into the die the operator depresses both treadles I″ M″, causing one complete revolution to be imparted to each of the cams I M, by which the upper plunger K is moved downward until its block K comes in contact with the upper edge of the die E, in which position it remains stationary, and when in such position the lower plunger G is moved upward, causing the drivers *f f* to force the nails entirely through the heel and causing the upper ends of such nails to be clinched against the under side of the steel anvil K^3, attached to the block K^4. After the nails have been driven and clinched, as above described, the plunger K moves upward to its normal position a little in advance of the commencement of the second portion of the upward throw of the lower plunger, causing the now finished heel to be ejected from within the die E by the action of the spring *g′*, after which the lower plunger returns to its normal position, when the machine is in readiness for the making of another heel, and so on.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a heel-machine, the combination of the rotary driving-shaft having a pair of cams, the upper and lower pivoted rock-levers respectively operated on at one end by the two cams, the upper and lower plungers pivoted, respectively, to the other ends of the rock-levers and both positively reciprocated thereby, the drivers operated by the lower plunger, a

clinching-block on the upper plunger, a cutting-die, and a perforated follower located in the die above the lower plunger, substantially as described.

2. In a heel-machine, the combination of a rotary driving-shaft having a pair of cams, the upper and lower pivoted rock-levers respectively operated on at one end by the two cams, the upper and lower plungers pivoted, respectively, to the other ends of the rock-levers and both positively reciprocated thereby, the drivers operated by the lower plunger, a clinching-block on the upper plunger, a cutting-die, a perforated follower located in the die above the lower plunger, and two clutches having means to independently operate them for throwing either one of the two cams into gear with the main driving-shaft, substantially as described.

3. The combination of the rotary driving-shaft B, having a pair of cams I and M, the upper and lower rock-levers L and H respectively operated on at one end by the two cams, the upper and lower links L′ and H′, pivoted, respectively, to the rock-levers and to the frame of the machine, the upper and lower plungers K and G, pivoted, respectively, to the rock-levers and both positively reciprocated thereby, the drivers *f*, operated by the lower plunger, a clinching-block K″ on the upper plunger, a cutting-die E, a perforated follower F, located in the die above the lower plunger, and means for throwing either one of the cams into gear with the rotary driving-shaft, substantially as described.

4. In a heel-machine, the combination, with the main driving-shaft B, having a grooved cam D^5, of the stationary knife D and the rock-shaft D^3, having at one end a lateral arm D″, carrying a knife D′, and at the other end a lateral arm D^4, engaging the grooved cam of the main driving-shaft, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of February, A. D. 1892.

EUGENE H. TAYLOR.

Witnesses:
ALBAN ANDRÉN,
ALICE A. PERKINS.