(No Model.) 4 Sheets—Sheet 1.

J. WARREN.

BOOT TREEING MACHINE.

No. 504,765. Patented Sept. 12, 1893.

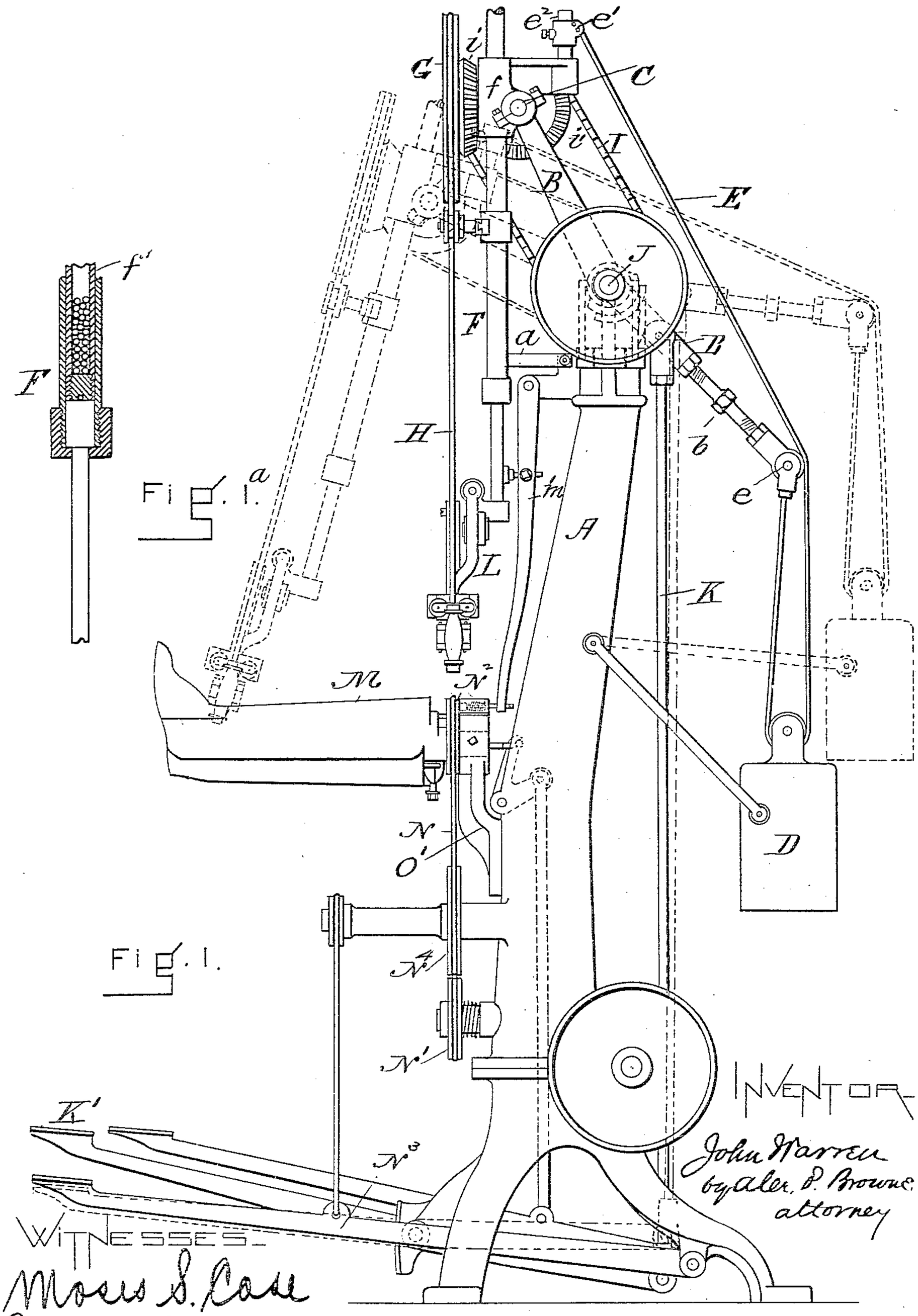

Fig. 1.

(No Model.)

4 Sheets—Sheet 2.

J. WARREN.

BOOT TREEING MACHINE.

No. 504,765. Patented Sept. 12, 1893.

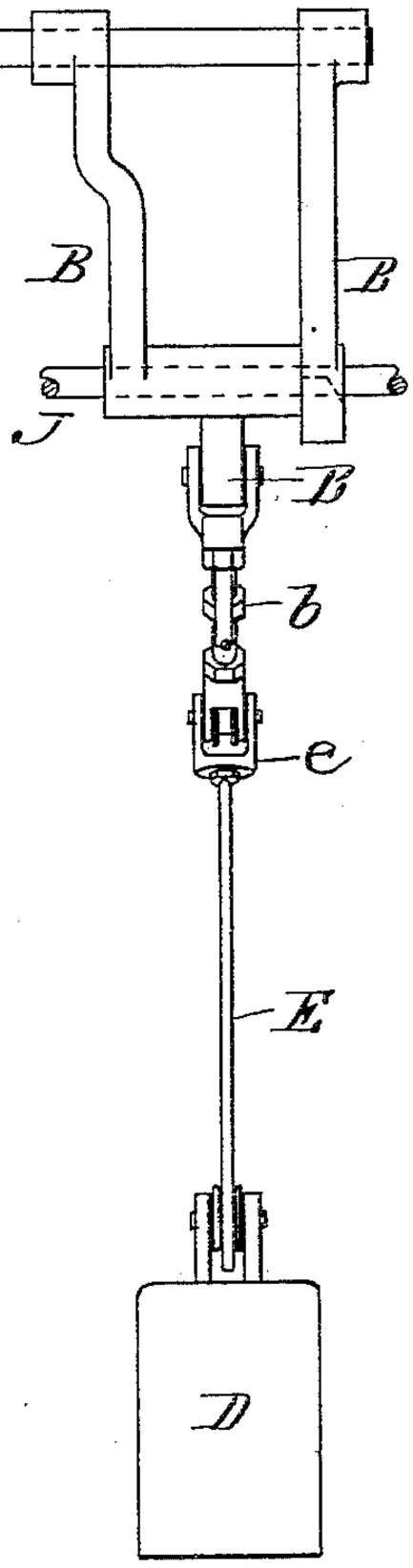

Fig. 3.

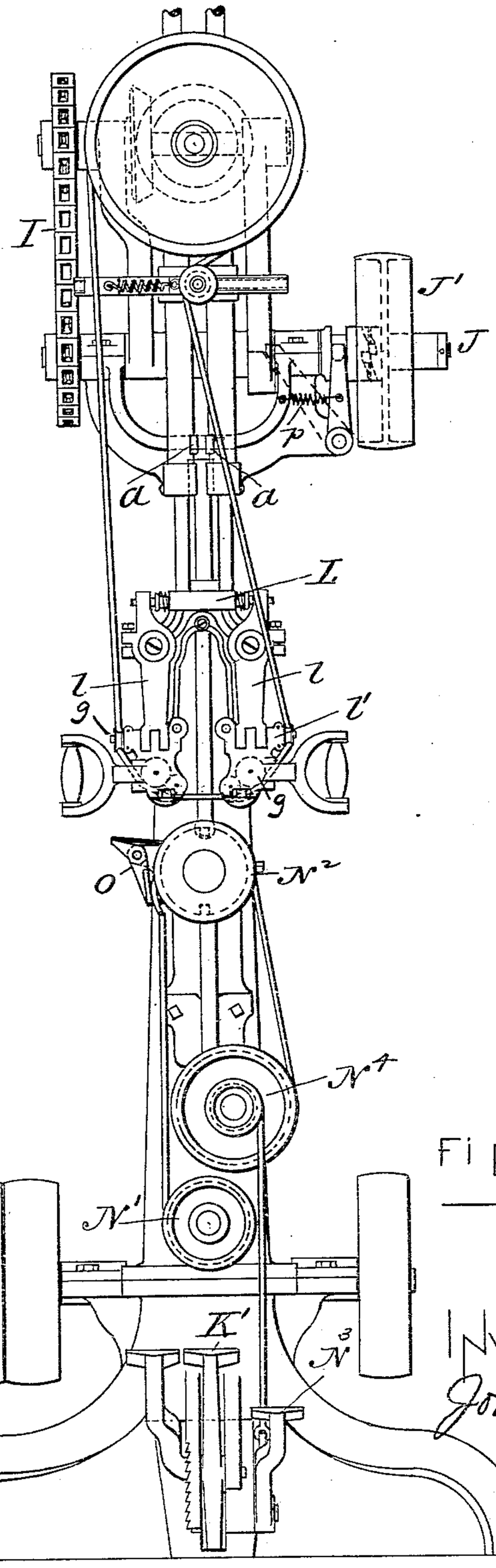

Fig. 2.

WITNESSES.

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(No Model.)

4 Sheets—Sheet 3.

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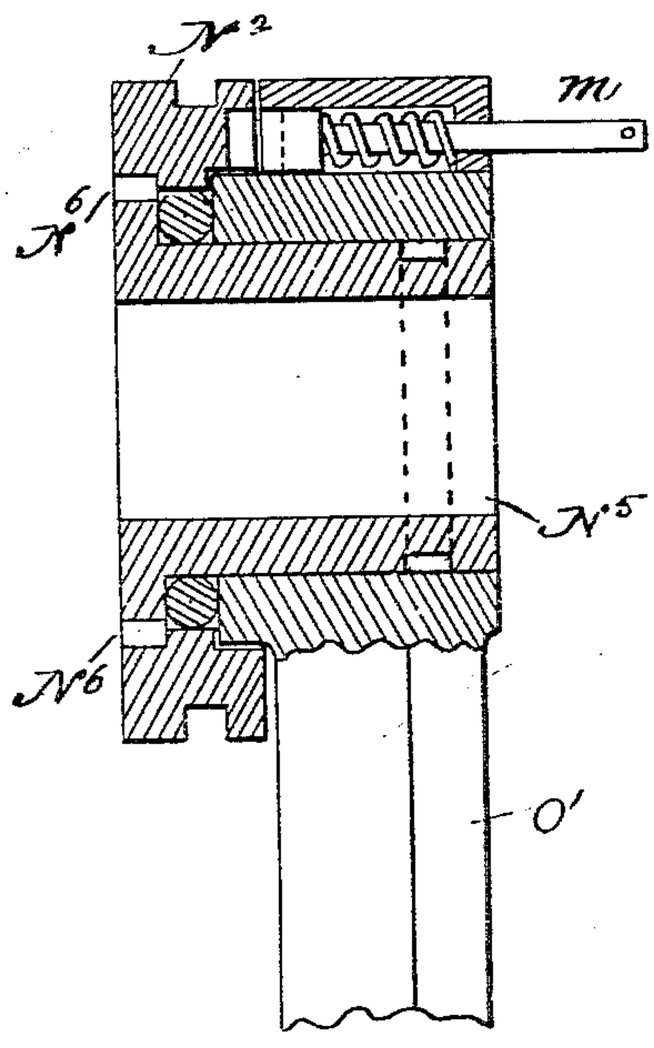

Fig. 4.

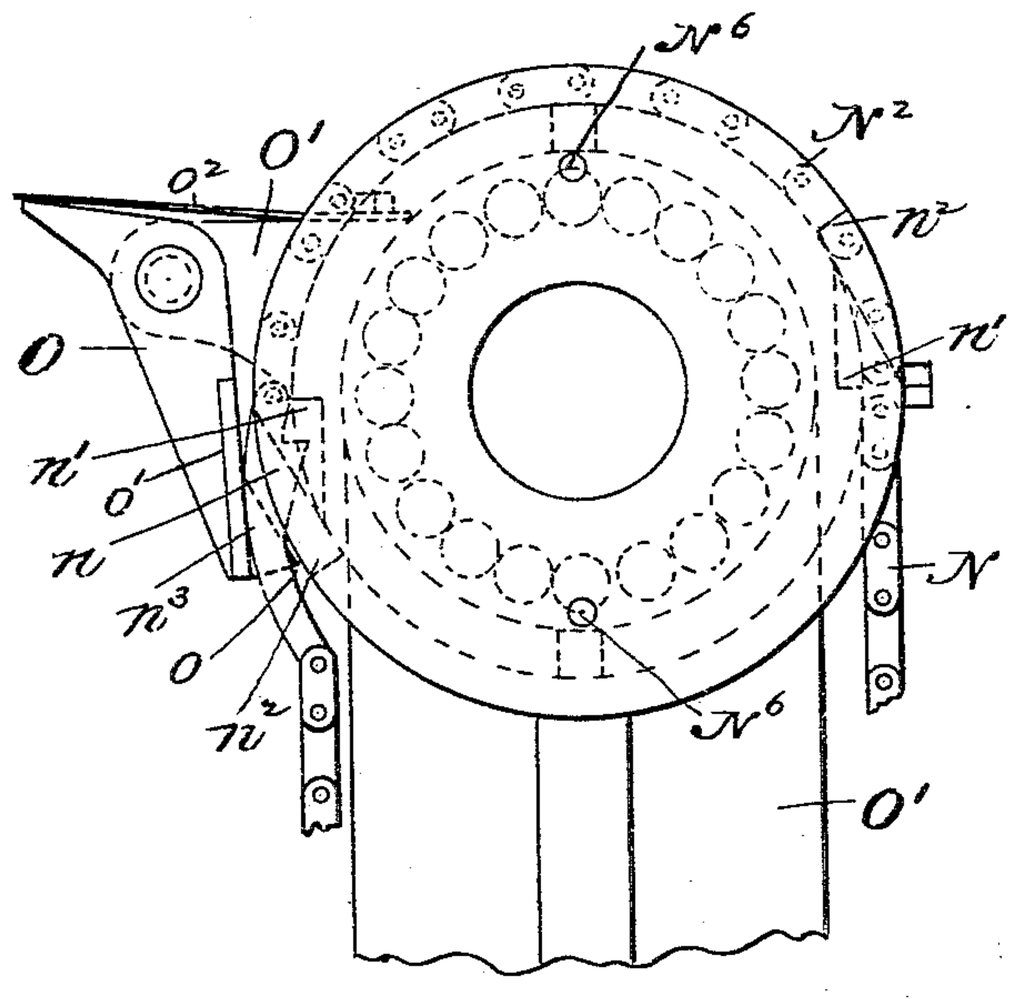

Fig. 5.

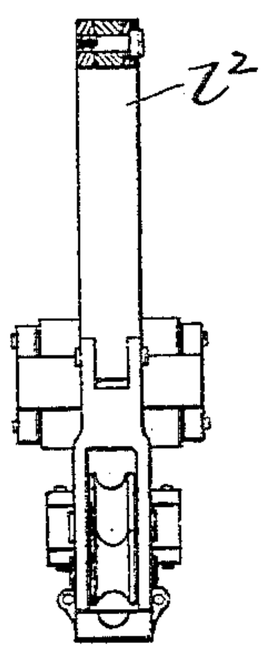

Fig. 6.

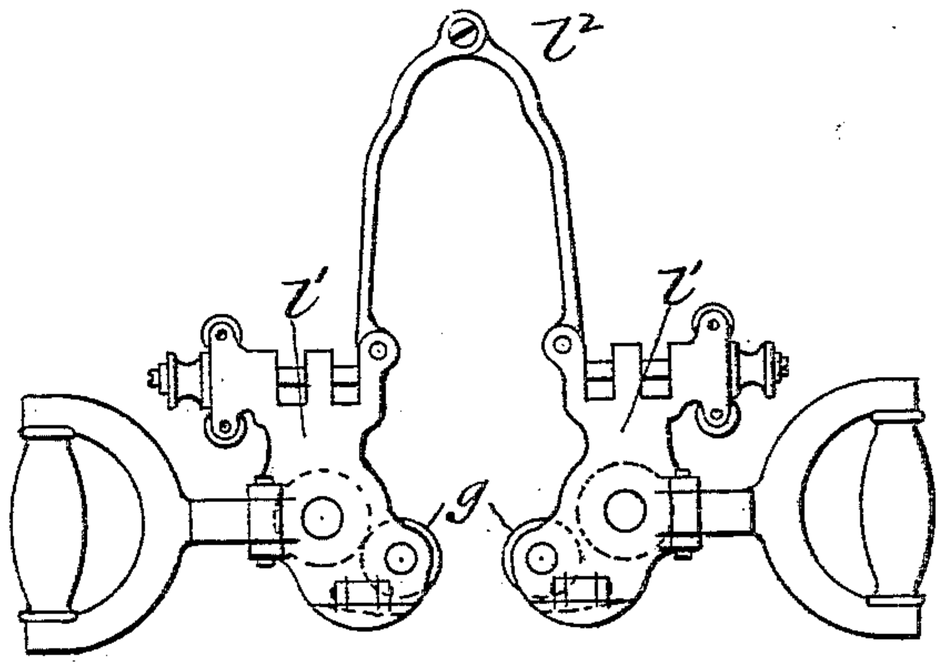

Fig. 7.

WITNESSES.

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(No Model.) 4 Sheets—Sheet 4.

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BOOT TREEING MACHINE.

No. 504,765. Patented Sept. 12, 1893.

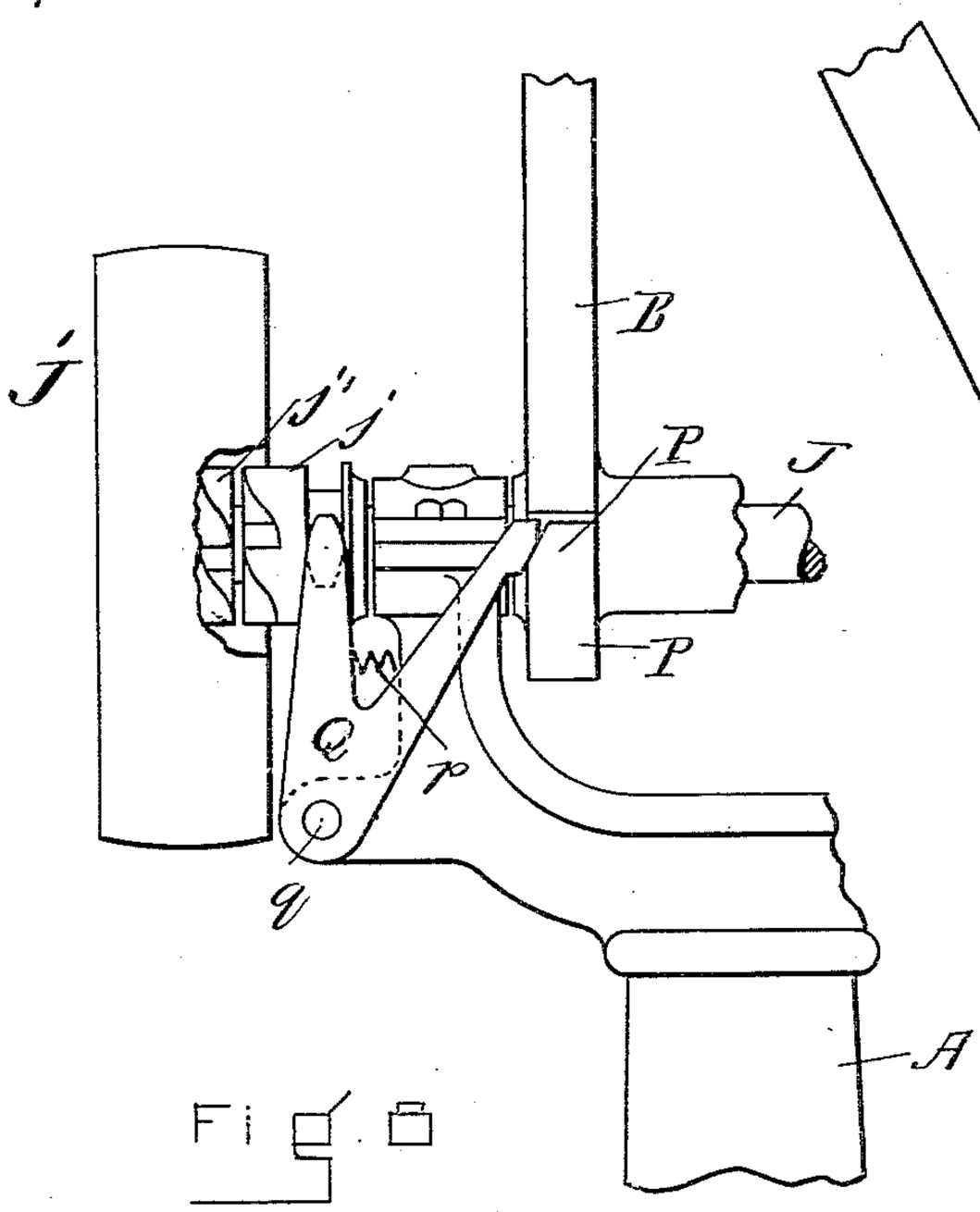

Fig. 8.

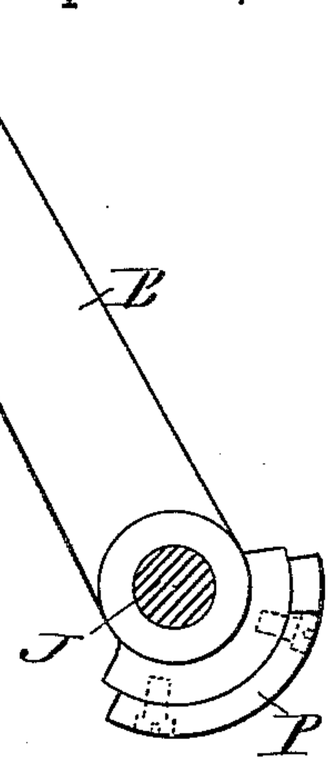

Fig. 9.

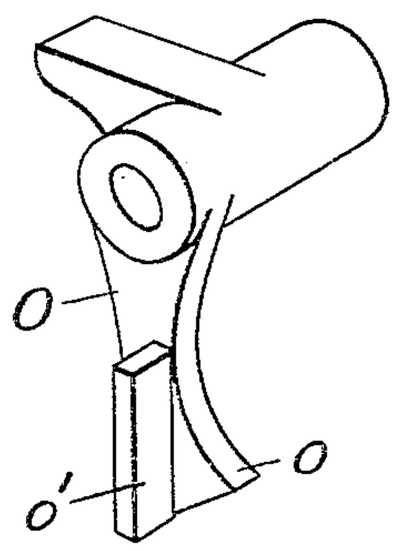

Fig. 10.

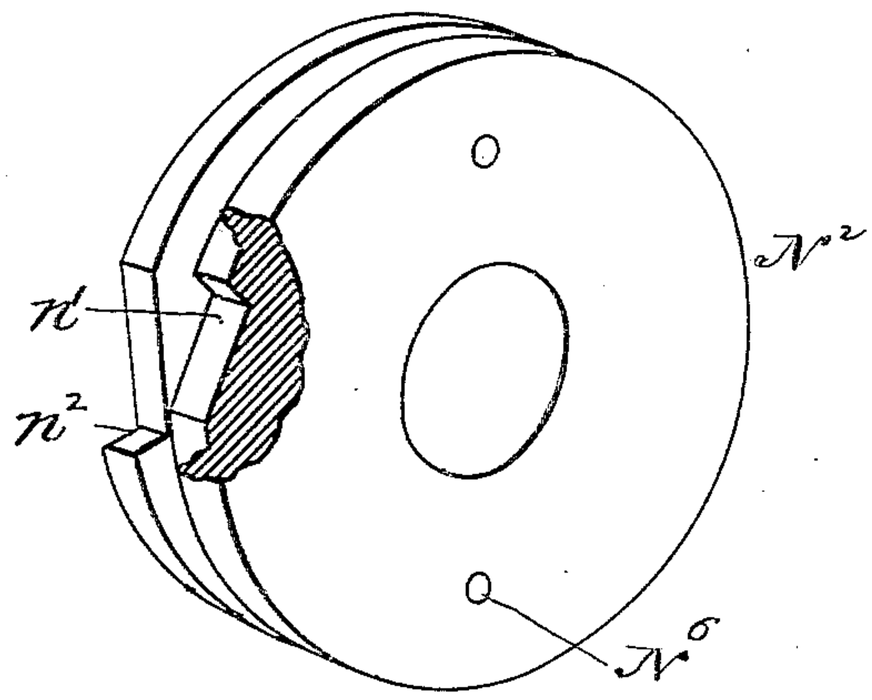

Fig. 11.

WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN WARREN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE GLOBE TREEING MACHINE COMPANY, OF SAME PLACE, AND NASHUA, NEW HAMPSHIRE.

BOOT-TREEING MACHINE.

SPECIFICATION forming part of Letters Patent No. 504,765, dated September 12, 1893.

Application filed July 8, 1892. Serial No. 439,404. (No model.)

To all whom it may concern:

Be it known that I, JOHN WARREN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Treeing Boots and Shoes, of which the following is a specification.

My invention relates to machines for treeing boots and shoes, and its object is to improve the construction of such machines, so that the operation of treeing may be performed better, faster, cheaper and easier than heretofore.

A feature of my present improvement consists in the manner in which I adapt the treeing mechanism proper to be moved both in and out and up and down with respect to the surface of the work to be treed with less labor than has heretofore been required. In the accompanying drawings I have represented this as applied in a machine of the type in which the treeing is done by means of an endless belt.

Figure 1 is a side elevation of such a machine; Fig. 2 a front elevation thereof, and Fig. 3 a similar view of a portion of the supporting lever mechanism alone. Fig. 1ª is a vertical section of a portion of the telescopic frame of the treeing mechanism, hereinafter more fully described. At Fig. 4 I have shown on an enlarged scale in section a holding mechanism for holding the tree in a given position, and at Fig. 5 in side elevation a similar view of a portion of the tree reversing mechanism. Figs. 6 and 7 are side and front views respectively of what I term the rubbing head, to illustrate an improvement therein which will be hereinafter more fully set forth. Fig. 8 is a rear elevation of a portion of the machine, showing the stopping and starting mechanism as hereinafter explained, and Fig. 9 a side view of the clutch operating cam. Fig. 10 is a perspective view of the detent of the tree reversing mechanism and Fig. 11 a similar view of the sheave on the said mechanism with which the detent engages, all as hereinafter more fully set forth.

In the drawings A represents the standard of the machine. Upon this standard is pivotally mounted what I call the supporting lever B, having arms extending on both sides of the standard and having pivoted upon one arm, as at C, the treeing mechanism proper, while to the other arm of the lever is attached a counter-balance D. This counter-balance is preferably formed of a weight hung upon a cord or chain E, attached both to the supporting lever as at *e* and also as at *e'* to an extension of the treeing mechanism above the point C of its pivotal connection with its supporting lever. By means of this construction it will be seen that the same weight D operates as a counter-balance for the supporting lever around its pivot on the standard of the machine, and also as a counter-balance for the treeing mechanism around its pivot upon the supporting lever. Both of these counter-balances I prefer to make adjustable, and for this purpose I put a turn buckle *b* in that arm of the supporting lever B on the weighted side of its fulcrum by which the arm may be lengthened or shortened at will, and I similarly provide for regulating the distance of the point of attachment *e'* from its center C by attaching the cord E to a collar adjustable upon a post e^2 forming a part of the extension of the treeing mechanism beyond its pivot C.

The treeing mechanism shown in the drawings consists of a frame F carrying a driving pulley G and guide rolls *g*, set in a rubbing head L, located at the opposite end of the frame, over which rolls runs the polishing belt H. Power to drive this belt is communicated to the pulley G in any convenient manner, as for example by beveled gears *i*, *i'*, the latter of which is for convenience mounted upon a shaft C, turning in bearings in the end of the lever B, upon which shaft the treeing frame F is pivotally supported as before described. The gear *i* of the pulley G turns upon a stud, not shown, upon the head *f* of the frame F, and the gear *i'* is driven in any convenient manner as by a sprocket belt I extending from the main shaft J of the machine, see Fig. 2, which shaft for convenience also forms the support upon which the supporting lever is pivoted. By means of a rod K and treadle K' the operator may vary the position of the lever B upon the shaft J, thereby raising and lowering the treeing mechanism with relation to the work, and by manually swinging the frame F around the shaft

C he may vary the position of the rubbing head inwardly and outwardly over the work.

By virtue of the construction thus far described it will be seen that all the motions which the operator is required to impart to the treeing frame are motions of counter-balanced lever mechanism and can consequently be performed with the minimum of exertion. This is a feature which I believe not to have existed in machines of this class prior to my present improvement.

I will now describe more in detail the treeing mechanism proper. The frame F is made telescopic as shown at Figs. 1 and 1ª, this being a well known construction to allow the belt to be carried over and in contact with the various portions of the boot. The lower portion of the frame carries what I call the rubbing head above mentioned, its weight being supported by the belt H which is thereby put under tension.

For certain parts of the treeing operation, less pressure of the belt upon the work is needed than for others. To allow for this I place within the outer part of the telescope a sliding weight, which may be conveniently a tube f', having its lower and closed end weighted with shot. When this weighted tube is in place, it is obvious that its weight, as well as that of the rubbing head, is brought upon the belt, but when the weighted tube is removed, the belt will be pressed down by the weight of the rubbing head alone.

The rubbing head L consists (see Fig. 2) of a pair of arms l pivotally supported upon the head L so as to be movable in a direction at right angles to the length of the work to be treed, and to these arms are pivoted the heads proper l' so as to have a motion at right angles to the pivotal motion of the arms l. Thus in addition to the movement of the belt obtained by raising and lowering the frame F and also by swinging it around its pivot as

The tree M (see Fig. 1) is of ordinary construction, and provided with the usual lever lock, whereby it may be drawn up to and held against the face of the sheave N^2, a dowel or dowels (not shown) on that part of the tree next the sheave engaging with a hole or holes N^6 in the latter. The tree is held against undesigned revolution by means of a spring latch m (see Fig. 4) attached to an arm m' (see Fig. 1) pivoted to the standard A and located in the path of motion of the frame F when swung to its inner or non-working position, shown at full lines in Fig. 1, in which position the frame is itself held by spring clips a projecting from the standard A. (See Figs. 1 and 2.) In this position of the frame F it bears against the arm m' and keeps the latch m out of engagement with the sheave and tree which are now free to be revolved.

To give the tree M a half revolution when desired, I employ a chain or belt N, one end of which is attached to a torsion drum N' upon the front of the standard A. This chain passes up over the sheave N^2, and thence to a treadle N^3. (See Figs. 1 and 2.) In the drawings I have shown a multiplying pulley N^4 interposed between the sheave N^2 and the treadle N^3 to lessen the necessary motion of the latter. This belt N is provided with a link n (see Fig. 5) carrying a pawl which is adapted to engage with a recessed notch n' in the groove of the sheave N^2. (See Fig 11.) A spring actuated latch or detent O (see Fig. 10) is pivoted upon the bracket O', and the toe o of this latch rides upon the rim of the groove of the sheave N^2 until under the pressure of the spring it is thrown into a notch n^2 in the rim (see Fig. 11) to stop the further revolution of the sheave. A wing or lateral projection o' from the detent O lies in the path of a swell n^3 upon the back of the pawl link n, and the recess n' in the groove of the sheave N^2 is set far enough beyond the position of the notch n^2 formed in

which was wound up in the operation of revolving the tree, will cause the chain to run back idle over the sheave into its original position in readiness to again reverse the tree when power is again applied to the treadle.

The machine as shown in Fig. 1 is presumably at rest, the belt carrying frame being in its innermost and uppermost position and engaged by the spring clips *a* which hold it in place. To start the machine, the operator standing in front thereof releases the belt frame F from its holding clips by swinging it slightly outward. This releases the arm *m'* and the latch *m* locks the tree M. Now by pressing down the treadle K' the workman causes the supporting lever B to swing around its fulcrum, thereby lowering the belt frame downwardly and outwardly into operative position. At the same time, a cam P upon the lever B (see Figs. 8 and 9) rocks a shifting fork Q, pivoted at *q* on the frame A, and thereby brings into connection the two parts *j*, *j'* of the clutch driving pulley J' thereby starting the machine. The operator by varying the position of the treadle K', can determine the height of the belt with respect to his work. By swinging the frame F around its pivot C upon the supporting lever he can vary the position of the operative portion of the belt at will in and out upon the work, and by swinging the rubbing heads *l'* around their pivots he can still farther carry that portion of the belt outwardly and upwardly over the foot portion of the work as before described, while the telescopic construction of the frame F enables the belt to be carried downwardly on the sides of the work as far as may be desired.

It will be observed that by properly varying or compounding the motions above described, the workman may tree the different portions of the work in any order that he likes and may tree one portion much or little as compared with another and can exactly regulate the portions to be treed and left untreed respectively. Ordinarily after treeing the whole of the upper portion and foot of the boot when in the position shown at Fig. 1, the tree is reversed by means of the chain and pawl before described and the treeing is then proceeded with on the part of the work thus freshly exposed. When the frame J is swung back into its place of rest, it engages with and is held by the spring clips *a*, and has meanwhile forced inward the arm *m'* and unlocked the sheave and tree. The clutch of the driving pulley is broken by a spring *p* throwing the pulley shifting fork Q in the opposite direction as the cam P on the lever B moves back, and the belt is thereby stopped. The work may now if desired be reversed upon the tree by means of the reversing mechanism.

I claim—

1. In a machine for treeing boots and shoes, the combination of a standard, a lever pivoted thereon, a treeing mechanism pivoted to said lever, and a counter-balance consisting of a weight supported by a flexible connection, the ends of which are attached respectively to an arm of the pivoted lever and to the pivoted treeing mechanism whereby a single counter-balance weight serves to counterbalance the treeing mechanism both in its motions up and down and in and out with respect to the work, as set forth.

2. In a machine for treeing boots and shoes, a treeing mechanism consisting of a telescoping frame F, *f*, having a removable weight *f'* whereby the amount of pressure of the belt upon the work may be regulated for the purpose set forth.

3. In a machine for treeing boots and shoes, a tree having a revoluble sheave M, a locking mechanism therefor, a movable arm carrying an element of the said locking mechanism, and a treeing mechanism, movable against the said arm, whereby the same may be moved to unlock the tree for the purpose set forth.

4. The tree rotating and stopping mechanism herein described consisting of the revoluble tree M, having sheave N^2 with notches n' n^2, chain N with pawl link *n*, treadle N^3, and detent O, as set forth.

5. In a machine for treeing boots and shoes, the combination with a pivoted lever carrying the treeing mechanism and a clutch mechanism connected with the main power shaft, of means substantially as described connected to the said lever, whereby the turning mechanism may be stopped and started by moving the lever substantially as set forth.

In testimony whereof I have hereunto subscribed my name this 23d day of May, A. D. 1892.

JOHN WARREN.

Witnesses:
MOSES S. CASE,
ALEXANDER P. BROWNE.