No. 689,726. Patented Dec. 24, 1901.

J. KELSEY.

MOLDING MACHINE.

(Application filed Dec. 1, 1899. Renewed June 3, 1901.)

(No Model.) 2 Sheets—Sheet 1.

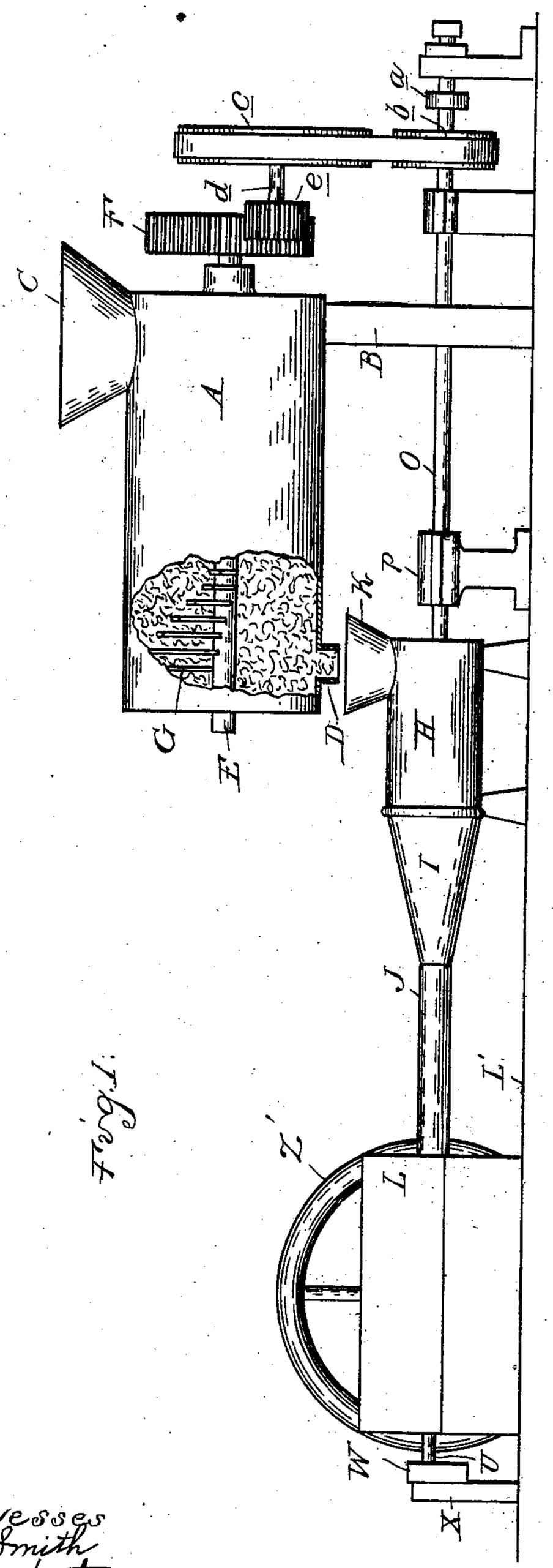

Fig. 1.

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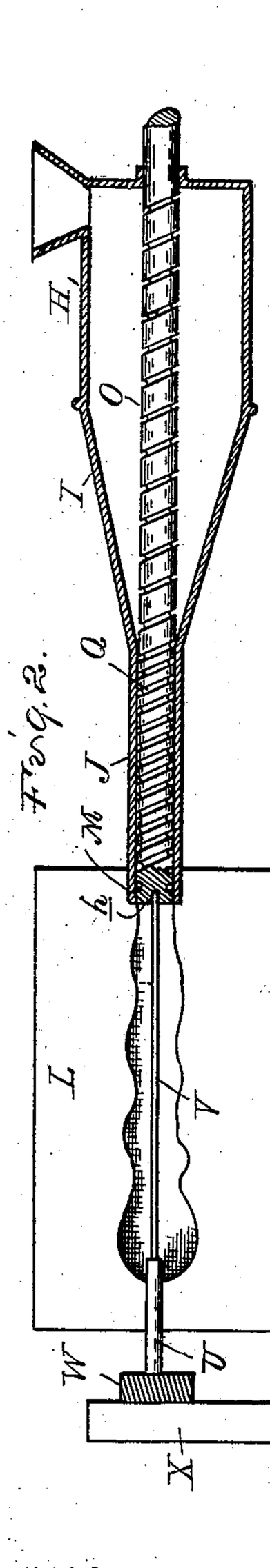

Fig. 2.

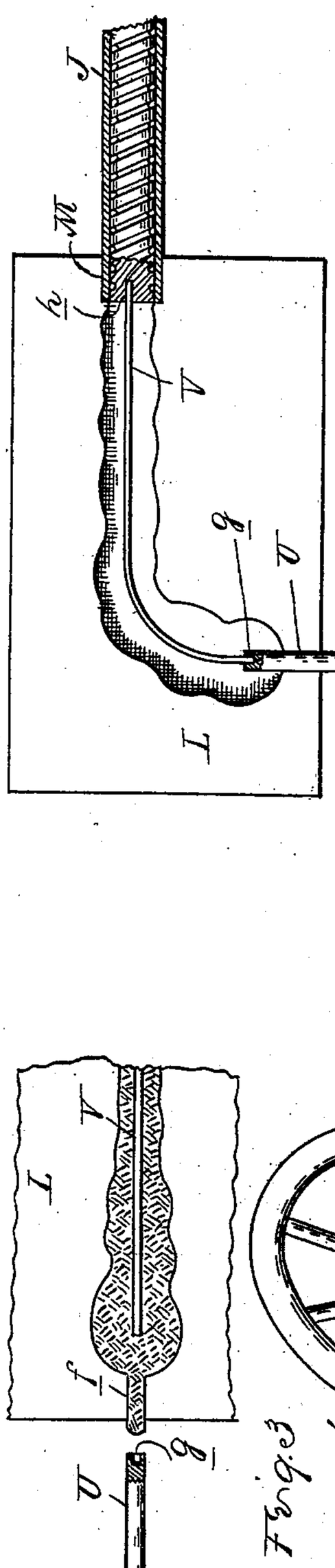

Fig. 5.

Fig. 6.

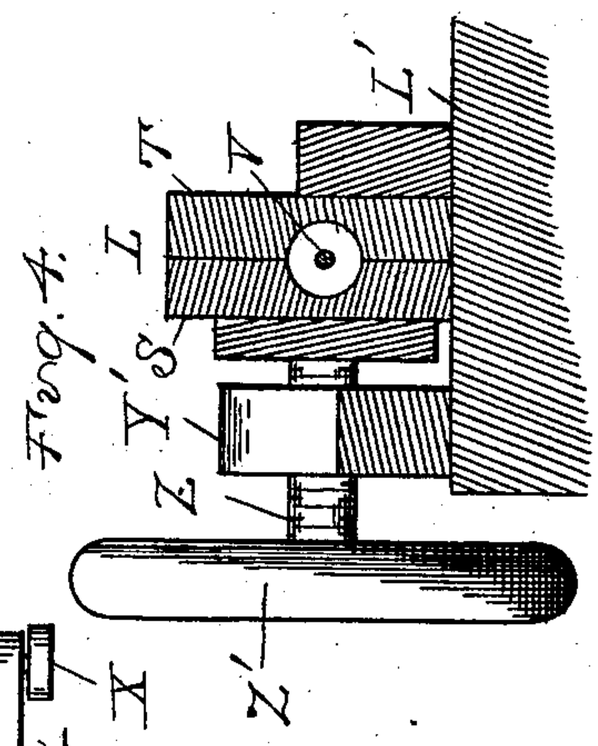

Fig. 4.

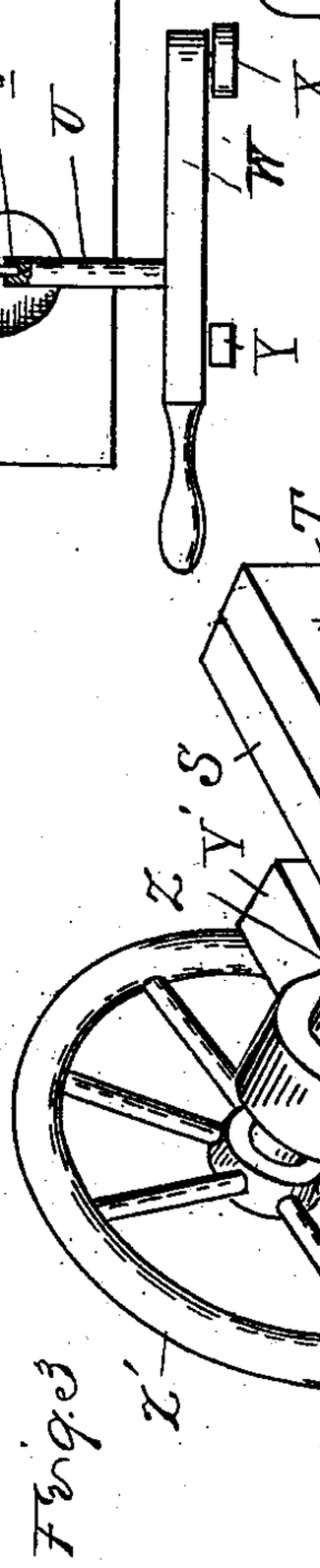

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN KELSEY, OF DETROIT, MICHIGAN.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,726, dated December 24, 1901.

Application filed December 1, 1899. Renewed June 3, 1901. Serial No. 62,965. (No model.)

To all whom it may concern:

Be it known that I, JOHN KELSEY, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention has particular reference to an apparatus for molding articles with cores from plastic compounds, and relates particularly to a mechanism of this type adapted for forming umbrella-handles.

The invention consists in the novel construction of the molding apparatus and in the peculiar construction, arrangement, and combination of the various parts of the latter, as will be more fully hereinafter described and shown.

In the drawings, Figure 1 is a side elevation of the molding-machine, partly in section. Fig. 2 is a sectional elevation of a portion of the machine. Fig. 3 is a perspective view of the sectional mold and the clamping mechanism for holding the mold-sections together. Fig. 4 is a section taken on line *x x*, Fig 3. Fig. 5 is a view in elevation of a mold-section for forming curved handles and a sectional elevation of the core-supports, and Fig. 6 is a side elevation of a mold-section for forming straight handles.

In the drawings thus briefly described the reference-letter A designates a cylindrical casing the interior of which constitutes the mixing-chamber of the molding-machine. This casing is mounted upon suitable supports B and is provided at the top with a hopper C and at the bottom, at the end opposite the hopper, with a discharge-spout D, as plainly shown in Fig. 1. Within the mixing-chamber and journaled in suitable bearings in the casing is a shaft E, which extends out and beyond the casing, carrying at its free end a gear-wheel F.

G designates stirrer-blades secured to the shaft, adapted upon the rotation of the latter to mix the ingredients forming the compound.

Below the mixing-chamber is arranged a cylindrical casing H, the interior of which forms the feed-chamber. This casing is provided at one end with a tapered portion I, which terminates in the elongated nozzle J, and K is a hopper communicating with this casing and arranged directly beneath the discharge-spout D of the mixing-chamber. The free end of the nozzle J extends some distance within a sectional mold L, detachably mounted upon a standard L′, the mold being provided with a socket M, adapted to receive the nozzle end.

O designates a shaft within the feed-chamber extending the length of the nozzle and projecting out beyond the chamber at its opposite end, the shaft being journaled in suitable bearings P. A worm Q is formed upon the portion of the shaft within the chamber and nozzle, which constitutes the feeding mechanism for forcing the compound within the mold.

Any suitable drive mechanism may be employed for operating the worm and the stirrer-blades. The preferable mechanism that I employ, however, consists of a band-pulley *a* upon the shaft O, which has motion imparted to it by any suitable motor, a drive-pulley *b* upon said shaft belted to a pulley *c* upon the stub-shaft *d*, mounted in suitable bearings, (not shown,) and a gear-pinion *e* upon the stub-shaft which meshes with the gear-wheel F upon the shaft E.

The mold into which the compound is forced by the worm comprises complementary sections S and T, each mold-section having the usual cavity formed therein. While the general construction of the mold is preferably the same in all cases, it is obvious that the cavities within the mold may differ according to the shape of the handle that is to be formed. In Fig. 5 the cavity is of such configuration as to form a curved umbrella-handle, while in Fig. 6 the mold is so constructed as to form a straight handle. In all cases, however, the mold is provided with the socket M, before referred to, which receives the end of the nozzle, and is likewise provided with an aperture *f*, extending from the exterior of the mold to the cavity within the latter. In this aperture is arranged a preferably cylindrical support U, having formed within its inner end a socket *g*, adapted to receive one end of the core V. The opposite end of the core projects beyond the cavity in the mold and is adapted to be received with-

in a socket *h*, formed in the end of the shaft O, which projects within the mold, the shaft constituting the support for the other end of the core.

It will be obvious from the description of the mold that the position of the support U relative to the mold will vary according to whether a straight or a bent handle is to be formed. In the latter case the support would extend without the mold, at the bottom of the latter, while in the former case it will project from the end of the mold, as shown in Fig. 3. In either case I preferably provide means for holding the support within the mold while the compound is being formed within the latter. In Fig. 3 the means employed for retaining the detachable support within the mold is in the form of a lever W, which is pivoted to an upright X upon the support L′ and adapted to be locked in any suitable manner when the lever is in position to an upright Y, extending upwardly from the same support. The means for clamping the mold-sections together during the operation of the machine comprises, essentially, a screw Z, extending through an upright Y′ and adapted to bear against one of the mold-sections, and a wheel Z′ for rotating the screw.

In the operation of the machine the compound, consisting, preferably, of wood-pulp and the liquid cement, is placed within the mixing-chamber and the ingredients of the compound thoroughly mixed by the stirrer-blades and subsequently discharged through the spout D into the feed-chamber. The plastic compound is then fed by means of the worm into the sectional mold, the mold-sections being clamped together in the manner shown in Fig. 3 and the detachable core-support U being held within the mold by means of the lever. After the mold is filled the lever is moved out of engagement with the detachable support, and the latter is forced out of the mold by the material fed by the screw. The retaining mechanism for the core being removed the machine is stopped and the mold withdrawn therefrom to be stored away. After the handle has hardened it is removed from the mold and the extension formed by the material forced within the aperture *f* cut off during the operation of finishing. The core projecting beyond the opposite end of the handle is adapted to be secured in any suitable manner to the umbrella-stick.

It will be obvious from the description of the molding apparatus that the core constituting a part of the handle, which is adapted to strengthen the latter, does not in any manner project out of the portion of the handle which is adapted to be grasped by the hand. Consequently the finishing of the handle by cutting or curving may be accomplished without any danger whatsoever of the knives coming in contact with the said core. Thus means are provided for effectively preventing the breakage of the knives and also reduces to a minimum the liability of the core being loosened within the handle. It will also be noticed that the construction of the apparatus is of such a character that as soon as one mold is removed from the machine another may be immediately put into its place, so that the machine is nearly continuous in its operation.

What I claim as my invention is—

1. In a machine for molding articles with a core from plastic compounds, the combination of a mold, a device for forcing the compound into the mold, and a detachable support for the core projecting within the mold-cavity, for the purpose described.

2. In a machine for molding articles with a core from plastic compounds, the combination of a mold, a device for forcing the compound into the mold, a support for the core at the inlet, and a detachable support for the core projecting within the mold-cavity at the other end of the mold, for the purpose described.

3. In a machine for molding articles with a core from plastic compounds, the combination of a mold, a screw for forcing the compound into the mold, a support, for the core in the mold, at the end of the screw, a plug at the other end of the mold projecting into the mold-cavity, adapted to support the other end of the core, and means for detachably holding the plug in position.

4. In a machine for molding handles with a core from plastic compounds, the combination with a mold, of a core therein, a nozzle leading to and fitting an aperture in the mold, a driven worm extending through the nozzle and supporting one end of the core, and a support for the opposite core end.

5. In a machine for molding articles with a core from plastic compounds, the combination of a feed-chamber into which the compound is fed, of a mold having a core therein, a nozzle leading from the feed-chamber to and fitting an aperture in the mold, a driven worm extending through the feed-chamber and nozzle, said worm having formed in its free end a socket adapted to receive and support one end of the core, and a detachable support for the opposite core end, substantially as described.

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

JOHN KELSEY.

Witnesses:
L. J. WHITTEMORE,
H. C. SMITH.