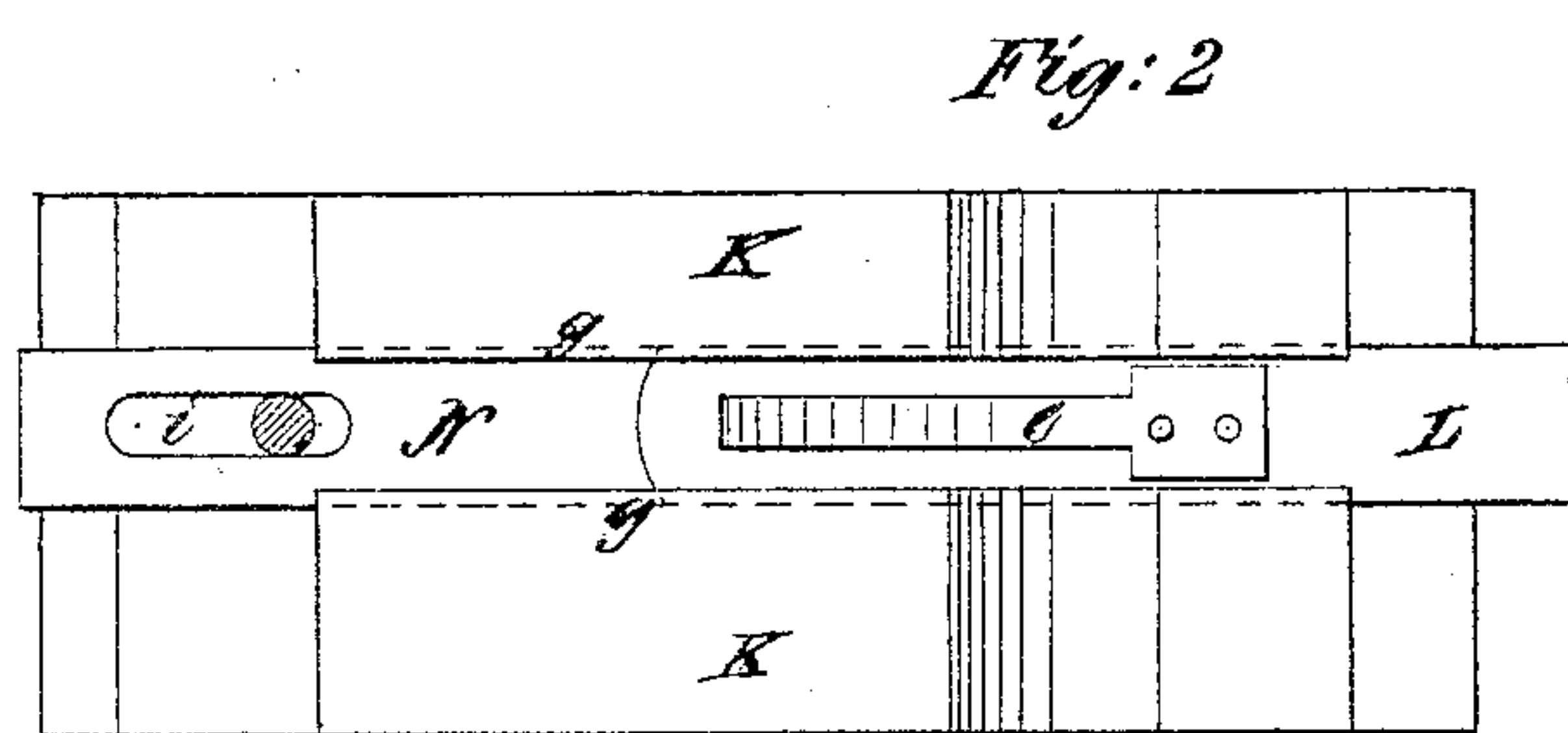
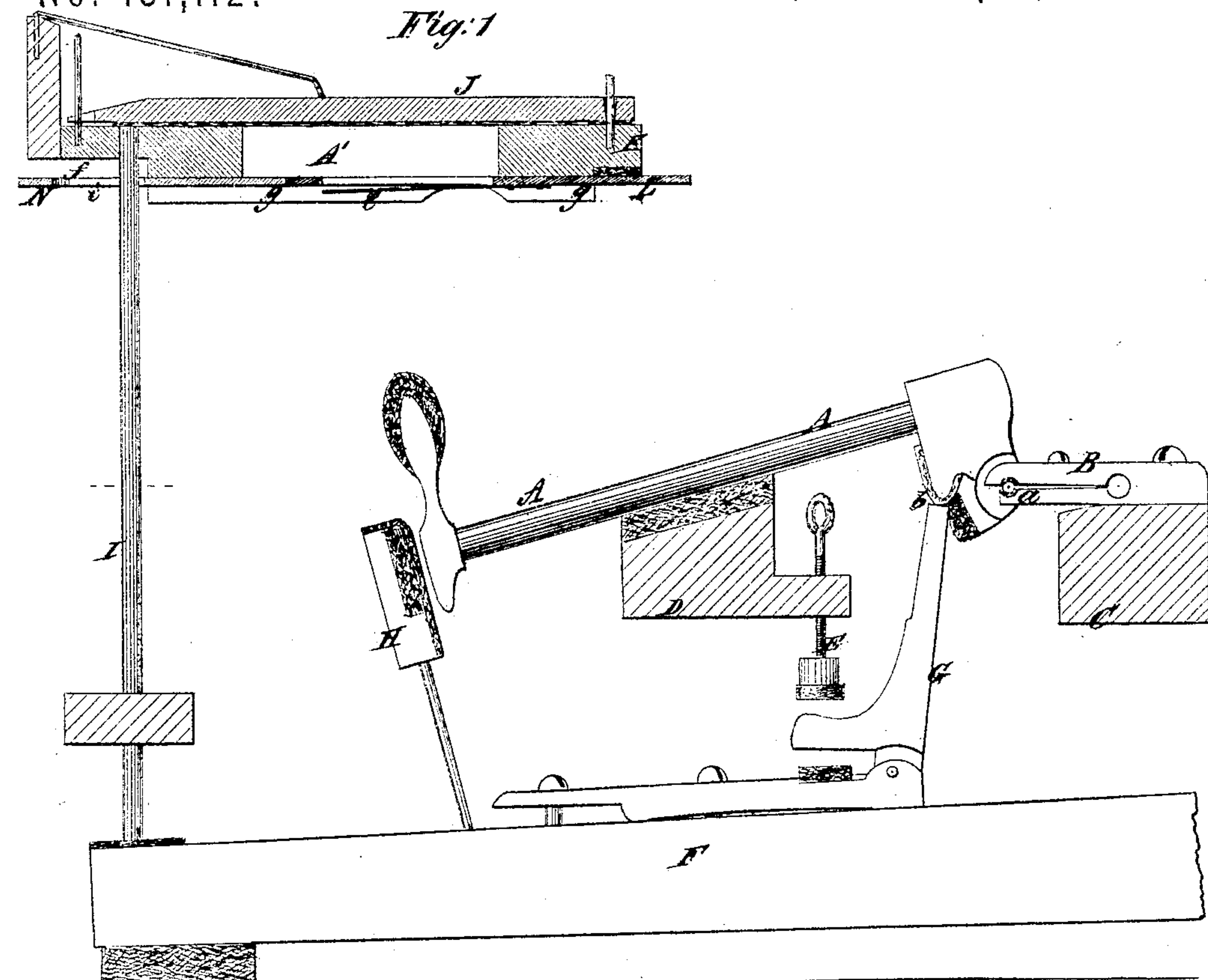


E. P. NEEDHAM.
 Improvement in Reed-Organ Attachments.
 No. 131,112. Patented Sep. 3, 1872.



Witnesses:
 Fred Hynes
 Fred Hynes

E. P. Needham

UNITED STATES PATENT OFFICE.

ELIAS P. NEEDHAM, OF NEW YORK, N. Y.

IMPROVEMENT IN REED-ORGAN ATTACHMENTS.

Specification forming part of Letters Patent No. 131,112, dated September 3, 1872.

Specification describing certain Improvements in Reed Musical Instruments, invented by ELIAS P. NEEDHAM, of the city, county, and State of New York.

This invention belongs to that class of reed musical instruments, such as reed-organs, harmoniums, &c., having key-boards, in which what is called a percussion action is used—that is to say, a hammer action is so applied to the reed as to strike the tongue for the purpose of increasing its vibrations and improving the tone. The invention consists in certain novel means whereby the adjustment of the reed with reference to the hammer action is provided for in such manner that the hammer may be caused to strike with precision upon that portion of the tongue at which the percussion is most advantageously applied. By this means the defective operation of the hammer action upon the reed, which frequently occurs from the practice, hitherto generally obtaining, of bringing the reed to its place against a fixed or immovable shoulder or stop and without facility of adjustment, is effectually avoided.

Figure 1 is a vertical transverse section of an apparatus constructed according to my invention. Fig. 2 is an inverted plan view of the "reed-board," forming a portion of the same.

The hammer action is arranged above the inner portion of the key F, and, as shown in the drawing, is constructed as follows: The hammer A is pivoted, at *a*, to the hammer-flange B of the hammer-rail C, with the rest-rail D arranged underneath and midway of its length, this rest-rail having the usual let-off E. The key F carries the jack G, acting upon the hammer at *b*, and furnished in the ordinary manner with the check H. From the inner end of the key F extends the vertical rod I, acting, by the depression of the outer or front end of the key, to open the valve J, arranged upon the reed-board K and over the opening or slot A', through which the wind resulting from the operation of the bellows passes to act upon the reed. The reed L is arranged in a groove or guide, *g*, of suitable form, and provided in the under side of the reed-board, longitudinal with the slot A', just mentioned; but instead of being closed or formed with a fixed stop at one end to arbitrarily limit the movement of the reed, or, in other words, insure its

retention in but one place or position, the groove *g* extends quite across the reed-board to the rabbet *f*, at the rear edge or part thereof. By this means the reed is permitted to be moved back and forth until adjusted with any portion of its tongue *e* in such relation with the hammer as to be struck thereby when such hammer is lifted by the operation of the key, the percussion upon the tongue setting the reed in vibration, and the vibration being prolonged by the action of the bellows, and the musical capacity of the instrument being thereby increased. By thus providing for the exact adjustment of the reed to bring the tongue to that position in which the hammer can act most advantageously upon the tongue, great superiority in the tone is secured as compared with that obtained by the hitherto common practice of bringing the reed arbitrarily to its place against a fixed stop, which, in many instances, fails to indicate with any degree of precision the point at which the movement of the reed, when pushed home, should be arrested to bring the requisite point along the length of the tongue in the requisite juxtaposition to the hammer. N is a slide placed in the rear-most portion of the slot *g*, and with its inner end made to fit snugly against the contiguous extremity of the reed. This slide is slotted at *i* to permit the passage through it, without detriment to its movement, of the rod I, actuating the valve J. After the adjustment of the reed, as hereinbefore set forth, the slide N is pushed forward against the end of the reed to completely close any portion of the valve-slot A, which otherwise would be left uncovered and permit the passage of a proportion of the wind from one side to the other of the reed-board, without exerting any force or action upon the reed. The slide may be in any position in front of or behind the reed to fulfil the office above specified.

The reed-board being arranged above the action, as hereinbefore fully described, there being no parts other than the usual casing, which may be of any height desired, it is obvious that the distance between the hammer action and the reeds may be as great as the easy working or operation of the action properly proportioned may require; and, furthermore, that the space below the keys being wholly removed in the arrangement of the one

reed-board and its accessories affords room for a second or subsidiary reed-board provided in any appropriate manner underneath the key-board, when desired.

What I claim as my invention is—

1. The reed, made adjustable in the groove *g* of the reed-board *K*, and with reference to the hammer *A*, of the hammer action, substantially as and for the purpose herein set forth.

2. The combination of the adjustable slide *N* with the adjustable reed *L* and the valve-slot

A' of the reed-board *K*, substantially as and for the purpose herein set forth.

3. The arrangement, substantially as herein described, of the reed-board *K*, carrying the reeds *L*, and the hammer action for exerting percussion upon reed-tongues *e*, for the purpose specified.

E. P. NEEDHAM.

Witnesses:

FRED. HAYNES,

FERD. TUSCH.