

(No Model.)

2 Sheets—Sheet 1.

J. C. DEAGAN & J. CARROLL.
MUSICAL INSTRUMENT.

No. 408,655.

Patented Aug. 6, 1889.

Fig. 1,

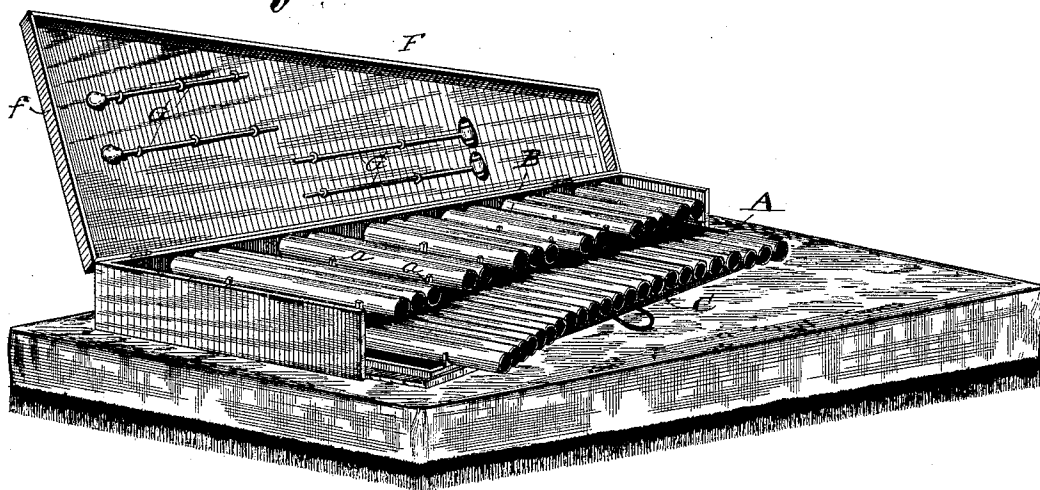
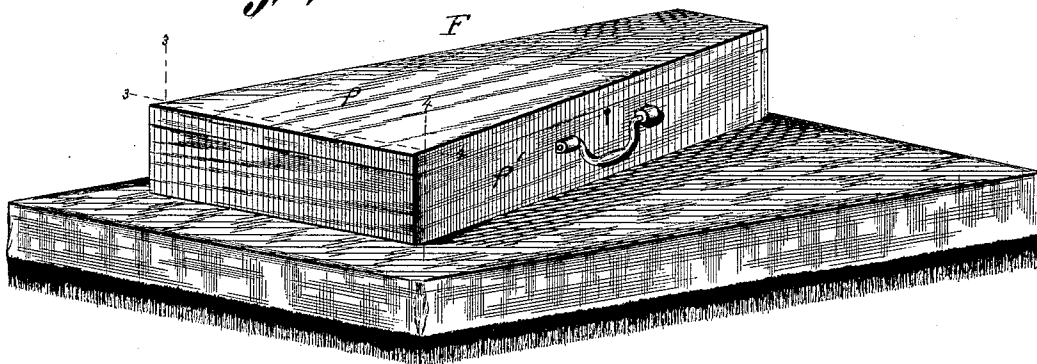


Fig. 2,



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N. W. Perkins Jr.

Inventors:
John C. Deagan
Joseph Carroll
by C. Moody atty

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Fig. 3,

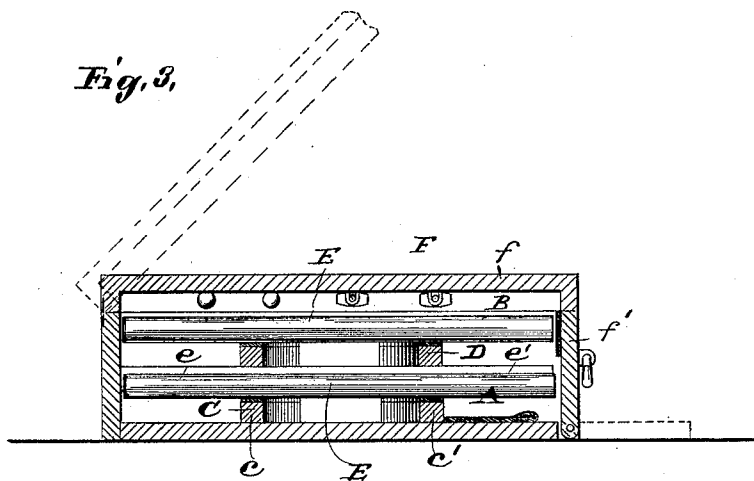


Fig. 6,

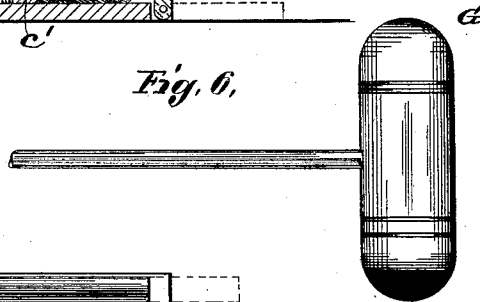


Fig. 4,

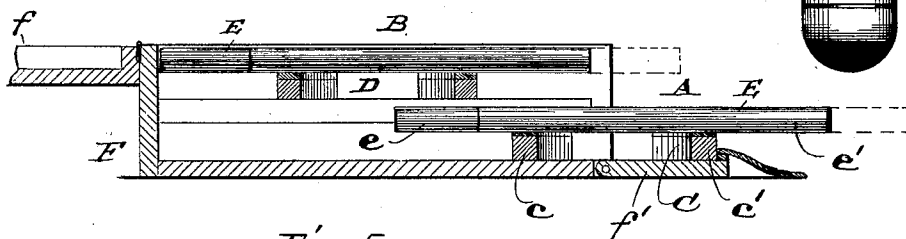
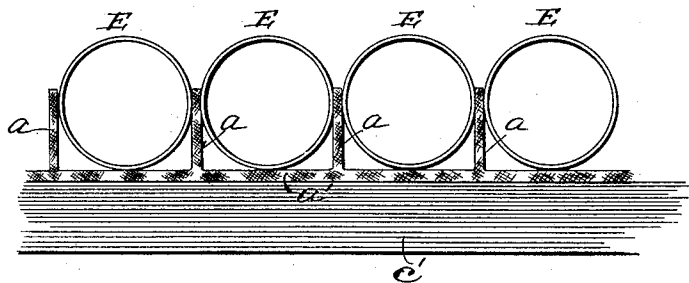


Fig. 5,



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UNITED STATES PATENT OFFICE.

JOHN C. DEAGAN AND JOSEPH CARROLL, OF ST. LOUIS, MISSOURI; SAID
CARROLL ASSIGNOR TO SAID DEAGAN.

MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 408,655, dated August 6, 1889.

Application filed May 7, 1888. Serial No. 273,118. (No model.)

To all whom it may concern:

Be it known that we, JOHN C. DEAGAN and JOSEPH CARROLL, of St. Louis, Missouri, have jointly made a new and useful Improvement in Musical Instruments, which we call "Pipelaphones," of which the following is a full, clear, and exact description.

This improvement relates to that class of musical instruments in which the sounds are produced by striking on tubular metallic bars.

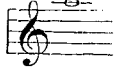
The said invention consists in the construction and combination of parts hereinafter set forth and claimed.

Figure 1 is a view in perspective of the improved instrument upon a suitable support, the instrument-case being opened; Fig. 2, a view of the case closed; Fig. 3, a vertical cross-section of the instrument and case closed. Fig. 4, a similar section showing the case opened and the lower set of tubes and supporting-frame drawn out; Fig. 5, an end elevation showing several of the tubes and their support, and Fig. 6 a side elevation of the hammer used upon the tubes.

The views are upon various scales. The same letters of reference denote the same parts.

The improved instrument, generally considered, is composed of two sets of tubes—one A of the sets being the scale of the tonic, and the other B being the complement which, with the set A, forms the chromatic scale. The set A can be used separately from the set B. The tubes in cross-section are preferably round, although we desire not to be restricted to a round tube. A polygonal tube, a square tube, or a flattened tube might be used; but the sound therefrom is not nearly as musical as from a perfectly round tube. The size and weight of the tube may also be somewhat varied; but we have ascertained that the best results are obtained from a tube one inch in diameter externally and of the weight known as "sixteen" (that is, metal one-sixteenth of an inch in thickness) and of brass or brassy metal. The harder brass is better for the higher notes. Other metals—gold, silver, copper, or steel—can be used. A diameter of one inch gives a pure harmonic tone, and from a tube of larger diameter, but of the same length and weight, the tone is

sharper and not so pleasing. With increased diameter and length, but with the same weight, the tone is not sharpened, but it is not so musical, and in high notes it would not answer. With diameter, length, and weight increased, the tone is sharpened. An inch tube of weight 16 and thirteen and a half inches long, when properly supported, gives, when struck with

a hammer of soft wood, the note A  60

high concert pitch, which is generally used in bands and orchestras and the better class of pianos. The lowest note which we have adopted for practical use is the note C, it being a sixth of an octave, or nine semitones, lower than the above-mentioned note A, and

to produce this note C  a tube of the 70

weight and diameter above mentioned and about eighteen inches long is used.

The instrument complete consists, usually, of thirty-eight such tubes, so far as diameter and weight are concerned, but graduated in respect to length from the low-C tube of twelve inches length up to the high-C tube, which is about six inches in length, and the intermediate tubes being, successively, from one-third to one-fourth of an inch shorter than the next lower one, which makes a chromatic scale of three octaves. The best ascertained method of tuning the tubes is to employ a pitch-pipe or graduated tuning-fork to tune by, and to cut each tube one-eighth of an inch longer than the tube is to be when finished, and then sharpen by filing off the end of the tube until the desired pitch is obtained, and so on until all the tubes are properly adjusted as to length and pitch. For example, the low-A tube, which when finished is about thirteen and one-half inches long, should be cut about thirteen and five-eighths inches long and sharpened by filing and until the desired pitch is obtained, and if that pitch is not reached by the time the tube is shortened to the thirteen and one-half inches length the shortening must continue until the pitch is obtained. If the tubes are to be plated, they should be tuned after plating.

The term "pipelaphone" is applied to this

instrument as being suitable therefor. A pipelaphone of thirty-three tubes, chromatic scale, is the one which is most in demand. It consists of the same tubes as the above, except the five lowest notes. A two-octave (twenty-five semitones) instrument can be used; also one in the scale of the tonic, (natural scale,) consisting of from thirteen to twenty whole notes mounted on a single frame. The support of the tubes is a matter of importance. If the tubes could be placed without any support, it would probably be the best procedure in the case of long tones. For short tones, similar to xylophone tones, or for quick musical passages, something answering as a damper is needed. For practical use, supports such as the frames C D are used for the sets A B, respectively. These frames in top view approximate a triangle in form, and the tubes are laid crosswise thereon, and so that the tubes each project equally from each side of the frame—that is, the center of the tube is over the central longitudinal line of the frame, and the ends *e e'* of the tube E project, respectively, similarly from the side bars *c c'* of the frame C, and the tubes in the set B are similarly placed upon the frame D. The tubes are suitably separated from each other, as by means of the pins *a*, Fig. 5, which, as well as that part of the frame with which the tubes come in contact, are cushioned, as by means of felt *a'*. The tubes can be slipped endwise upon their support, and when adjusted to bring them more to one side of the support the tones are shortened, and by arranging them so that an end of the tube is substantially over a side bar *c* of the support a short xylophone tone can be obtained from the tubes.

For convenience, the frames C D, with their respective sets of tubes, are contained in case F, Figs. 1, 2, 3, and 4, which may be constructed and may be made to open in any suitable manner—as, for instance, by raising the cover *f* and turning down the front *f'*, as shown—and the lower frame and set-up tubes may be adapted to be inclosed in the case beneath the upper frame and set of tubes, and when needed for use to be drawn out, as indicated in Figs. 1 and 4.

G represents a style of hammer well adapted for our pipelaphone. It is usually made of wood, harder wood—such as ebony—for bands and orchestras, and softer wood—such as bass-wood—for parlor use.

We are aware that metal tubes have heretofore been used in musical instruments, and do not broadly claim the same.

We claim—

1. In a musical instrument, the combination of a supporting-frame with a series of metallic tubes laid thereon and movable endwise, substantially as set forth.

2. In a musical instrument, the combination of a supporting-frame with a series of tubes which are movable endwise thereon, and pins *a*, which separate said tubes, substantially as set forth.

Witness our hands this 18th day of April, 1888.

JOHN C. DEAGAN.
JOSEPH CARROLL.

Witnesses:

C. D. MOODY,
F. E. G. CARR.