

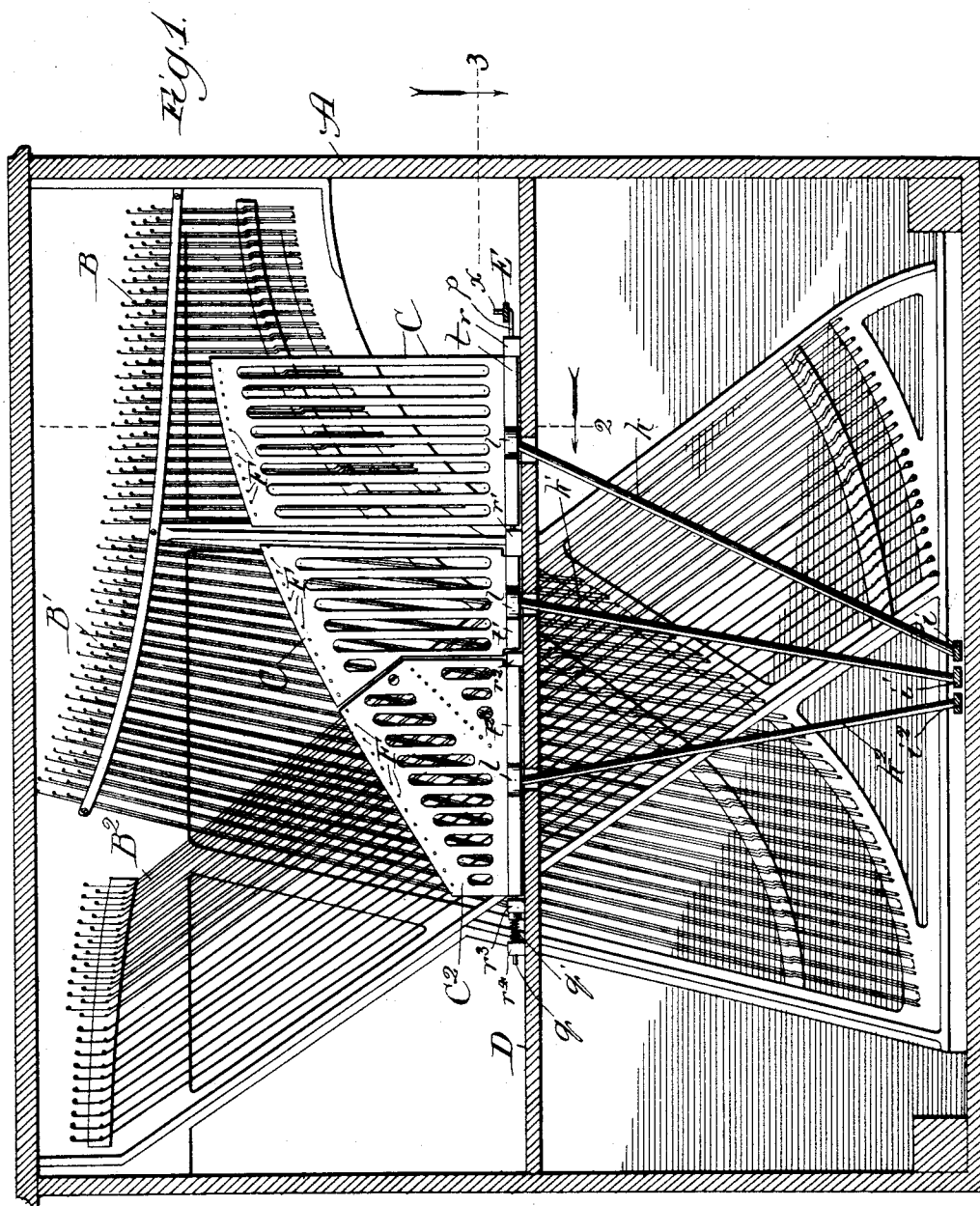
(No Model.)

2 Sheets—Sheet 1.

V. SEZEMSKY.
PIANO.

No. 538,797.

Patented May 7, 1895.



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Fig. 3.

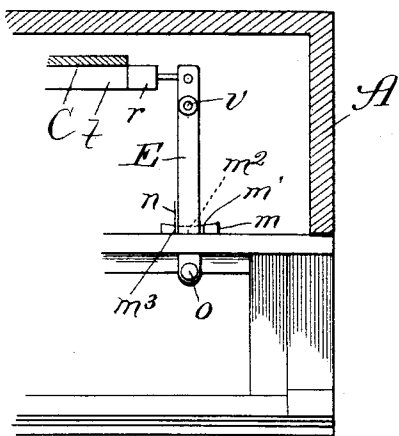


Fig. 2.

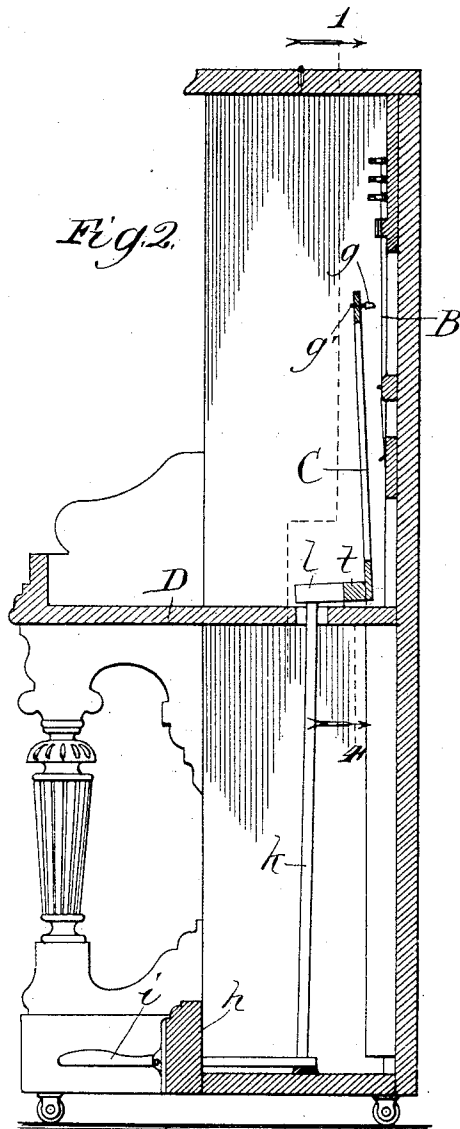


Fig. 5.

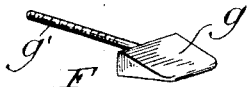
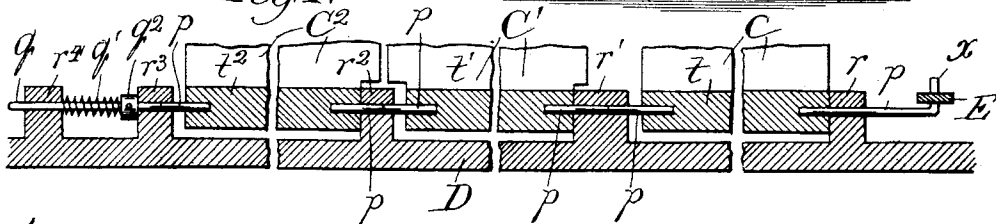


Fig. 4.



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UNITED STATES PATENT OFFICE.

VINCENC SEZEMSKY, OF CHICAGO, ILLINOIS.

PIANO.

SPECIFICATION forming part of Letters Patent No. 538,797, dated May 7, 1895.

Application filed February 20, 1895. Serial No. 539,108. (No model.)

To all whom it may concern:

Be it known that I, VINCENC SEZEMSKY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Pianos, of which the following is a specification.

The object of my invention is to provide an attachment for a piano, whether of the square, upright or grand variety, whereby the performer shall be enabled, at will, to produce a tone-effect by that instrument which is of the nature of that produced on the violin by lightly touching the string with the finger, and which is known as the "flageolet" tone; and my further object is to enable the performer, by the use of my improved attachment, to produce also an echo-effect. The pitch of each tone of a piano, as in all string instruments, being determined, other things being equal, by the length of a tightly drawn string, obviously by shortening the string, or, what is the same thing, the vibratory length thereof, the pitch is raised of the tone omitted by vibrating it, and if this manner of shortening be applied at any of certain predetermined points on a string the pitch may be raised accordingly to particular intervals, as the octave, a sixth, a fifth, a third, and the like. By employing the manner referred to of shortening the vibratory length of a string, in a way to produce a light bearing thereon, the desired flageolet-effect ensues; and if the application be made while a string is vibrating throughout its full normal length, an echo effect is produced.

My invention relates to mechanism for producing these and other effects on a piano; and it consists in the general as well as the more specific construction of the mechanism I have provided for the purpose.

Referring to the accompanying drawings, Figure 1 shows my improvement applied to an upright piano by a view in vertical sectional elevation. Fig. 2 is a section taken at the line 2 on Fig. 1 and viewed in the direction of the arrow; Fig. 3, a section taken at the line 3 on Fig. 1 and viewed in the direction of the arrow; Fig. 4, a section taken at

the line 4 on Fig. 2 and viewed in the direction of the arrow, and Fig. 5 a perspective view of a finger-detail.

A denotes the case of an upright piano which may involve any desired usual construction, with the strings divided into the sections B, B' and B², affording, respectively, the upper register, the middle register and the bass register, and stretched across the sounding-board behind the bass D for the key-board (not shown).

C, C' and C² are plates, preferably of the shapes shown and which are best formed of wood, and thin, with the longitudinal openings provided in them to avoid material obstruction to the sound. The plates are hinged at their lower edges, in a manner to be swung each independently of the other, to the keyboard base D, as a convenient support for them, and which is provided with bearings r, r', r^2, r^3 and r^4 , projecting from its upper surface in line with each other and at suitable intervals apart. Along their lower edges the plates are thickened or flanged as shown at t, t' and t^2 , and from the opposite ends of each of the flanges there project, horizontally, the pins p to enter openings provided to receive them in the aforesaid bearings, between the pair r, r' of which the plate C is thus pivotally supported, the plate C' being so supported between the pair r', r^2 , and the plate C² between the pair r^2, r^3 . In the bearings r^3 and r^4 is supported a longitudinally movable rod q surrounded by a helical spring q' confined endwise between a collar q^2 on the rod and the bearing r^4 , and serving a purpose hereinafter described; and the pin p at the outer end of the plate C is longer than the other pins, and is turned up at its extremity, as shown at x , where it is engaged by one end of a lever E, fulcrumed between its extremities, as shown at v in Fig. 3, and carrying at its opposite end, where it projects beyond the front of the case, a handle o , the lever being provided on one side with a tooth n to enter, by springing it, either of three notches m', m^2 and m^3 , in a retaining-piece m fastened to the inner side of the front of the piano-case.

From the center of the front side of the

lower edge of each plate C, C' and C², there projects forward a foot *l* from which, respectively, depend, through openings in the base D, the rods *k*, *k'* and *k²* to pedals *i*, *i'* and *i²*, extending forward through and fulcrumed in the base-board *h* at the front of the piano.

Along the upper-edge portion of the plate C it carries a series of fingers F, each preferably of the construction presented by Fig. 5, and involving a tip *g*, which I prefer to form of softly vulcanized rubber and of V-shape in cross-section, on a threaded stem *g'*. The length of each tip should be sufficient to cause it to reach across the number of strings provided for each tone; and the fingers are fastened at their stems in the upper-edge portion of the plate to extend horizontally backward from it, the intervals between them corresponding with those at which the sets of three strings each in the section B are placed apart, and their positions being such as to coincide with or cover points on the strings at which bearing upon them will shorten their vibratory lengths correspondingly, as, for example, to cause them each to emit, when struck, a sound an octave higher than its vibration in a normal condition. From the upper-edge portion of the plate C' there project, similarly, a series of the fingers F to coincide with the strings in one portion of the section B'; and another series project in a similar manner from the upper-edge portion of the plate C² to coincide with the remaining strings of the section B' which are crossed by the strings of the bass-section B², necessitating that the stems *g'* of the fingers pass between the latter to cause the tips thereon to coincide with the sets of strings they are intended to bear against.

Along that portion of the plate C², below the openings therein, which covers those strings in the section B² which are provided in sets of two each, I provide a series of the fingers F to coincide at their tips *g* with those strings.

From the foregoing description of the mechanism, it will be seen that by pressing down either pedal *i*, *i'* or *i²*, the plate connected with the pedal so pressed will be tilted rearward on its hinge, or pivotal support, to cause the tips of the fingers it carries to bear against the strings with which they coincide, (the arrangement being such as to produce light bearing thereof,) so that when the action (not shown) is played to cause the hammers thereof to strike the strings, a variety of flageolet-tone effect will be emitted by the latter, say, an octave higher than the tones they emit when caused to vibrate under normal conditions. As will be understood, the plates C, C' and C² are normally tilted forward toward their free edges to maintain the tips *g* out of contact with the strings, being given a tendency to assume the forward tilted position either by the weight of the feet *l* or otherwise; so that if the hammers of the action be caused to strike strings before depressing a pedal *i*, *i'* or *i²* relating to the strings so struck,

and such pedal be thereafter depressed to bear the tips of the fingers it controls against the respective strings, the vibration of the latter, while it will be partially checked, will be continued by the then shortened strings and sound, like an echo, an octave (or other interval, according to the arrangement) higher.

When the lever E is in the position illustrated with its tooth *n* in the notch *m²*, the tips *g* of the fingers on the plates C and C' and of the upper fingers on the plate C², each cover a set of three strings to a single tone in the sections B and B', and the tips of the lower series of fingers F on the plate C² each cover a set of two strings to a single tone in the bass-section B². By turning the lever E to engage its tooth with the notch *m²*, all the plates are shifted toward the left to cause the tips *g* of the fingers at the upper ends of the plates C, C' and C² to cover, each, only two strings of each tone, and those of the lower series of fingers on the plate C² to cover, each, only one string of each tone, whereby a part of each said tone, when produced by the stroke of a hammer in the action, will be normal and the other part of the flageolet-character described, the two varieties of tone blending together and producing a pleasing effect. Further turning the lever E to engage its tooth with the notch *m'*, shifts the plates still farther toward the left till the tips of the series of fingers F at their upper-edge portions cover, each, only one string; and the tips of the lower series of fingers on the plate C² may then cover no strings. The effect of playing the instrument under these conditions, with the fingers F pressed against the strings, is of the same nature as that produced when the tooth *n* is in the notch *m²*, but modified by the increased normal-tone quantity due to the pressure of each tip against only one string.

In shifting the plates through the medium of the lever E, as described, the spring *q'* is compressed, and its recoil, when the lever is sprung to free its tooth, returns the plates to their normal positions.

It should be stated that the parts comprised in my improved mechanism are so arranged as to avoid obstructing or in any way interfering with the piano-action (the hammers of which strike above the edges of the plates C, C' and C²) or the usual pedals of the instrument. Though the pedals *i*, *i'* and *i²* are represented in the position of the ordinary piano-pedals, they, or the latter, may be otherwise disposed, or the pedals of my improvement may be arranged to extend less low, or be otherwise disposed, to adapt them to be worked by the knees of the performer, and various means other than those shown and described may be provided for moving and for shifting the plates. Moreover, the mechanism shown and described may be variously modified, even in its application to an upright piano, without departure from my invention; and those skilled in the art will, as I have done, readily devise ways of suiting it to the dif-

ferent conditions in applying it to square and grand pianos.

What I claim as new, and desire to secure by Letters Patent, is—

5 1. In combination with a piano, an attachment having a swinging and shifting plate carrying tips to bear against the strings at desired points thereon, means for swinging the plate and means for shifting it, substan-
10 tially as and for the purposes set forth.

2. In combination with a piano, an attachment comprising independently movable plates, one for each of two or more sections of the strings of the instrument, each carry-
15 ing tips to bear against the strings at desired points thereon, and means for moving the plates, substantially as and for the purpose set forth.

3. In combination with a piano, an attach-
20 ment comprising independently swinging and interdependently shifting plates each carrying tips to bear against the strings at desired points thereon, means for swinging the plates and means for shifting them, substantially as
25 and for the purposes set forth.

4. In combination with a piano, an attachment comprising the three independently swinging plates, for the three string-sections of the instrument, two of said plates carrying,
30 each, one series of tips and the third two such series to bear against the strings at desired points thereon, and means for swinging the plates, substantially as and for the purpose set forth.

35 5. In combination with a piano, an attachment comprising the three independently swinging and interdependently shifting plates for the three string-sections of the instrument, two of said plates carrying, each, one series
40 of tips and the third two such series to bear

against the strings at desired points thereon, means for swinging the plates and means for shifting them, substantially as and for the purposes set forth.

6. In combination with a piano, an attach- 45 ment comprising the independently hinged plates C and C', each carrying a series of fingers F, and plate C² carrying the two series of said fingers, and pedal-devices connected with the plates for swinging them, substan- 50 tially as and for the purpose set forth.

7. In combination with a piano, an attachment comprising independently hinged shifting plates C C', each carrying a series of fin-
55 gers F, and C² carrying the two series of said fingers, pedal devices connected with the plates for swinging them, a lever for shifting the plates and a spring against the resistance of which said plates are shifted in one direc-
60 tion, substantially as and for the purpose set forth.

8. In combination with a piano, an attachment comprising independently hinged shifting plates C, C', each carrying a series of fin-
65 gers F, and C² carrying the two series of said fingers, an arm l projecting from each plate and provided with a pendent rod k engaging a pedal fulcrumed on the piano-case, a lever E carrying a tooth and connected with the plate C, a spring q' on a longitudinally mov-
70 able rod q and compressed by shifting said plates in one direction, and a notched retainer m to be engaged by said tooth, the whole being constructed and arranged to operate sub-
stantially as and for the purposes set forth.

VINCENC SEZEMSKY.

In presence of—

M. J. FROST,
J. N. HANSON.