

(No Model.)

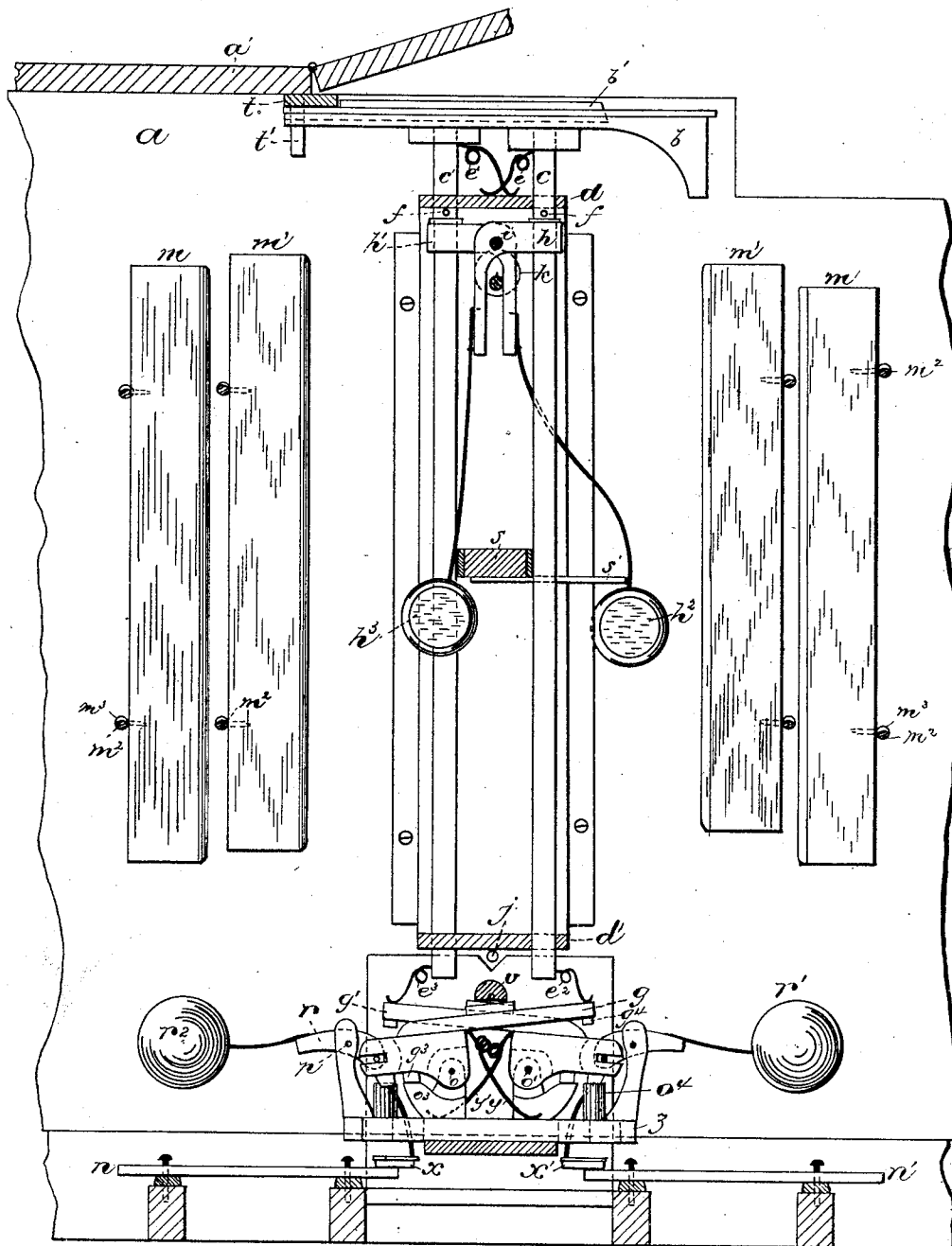
2 Sheets—Sheet 1.

M. BRAUN.

XYLO-METALLOPHONE PIANO.

No. 367,955.

Patented Aug. 9, 1887.



*Fig. 1.*

WITNESSES:

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INVENTOR:

*Max Braun,*

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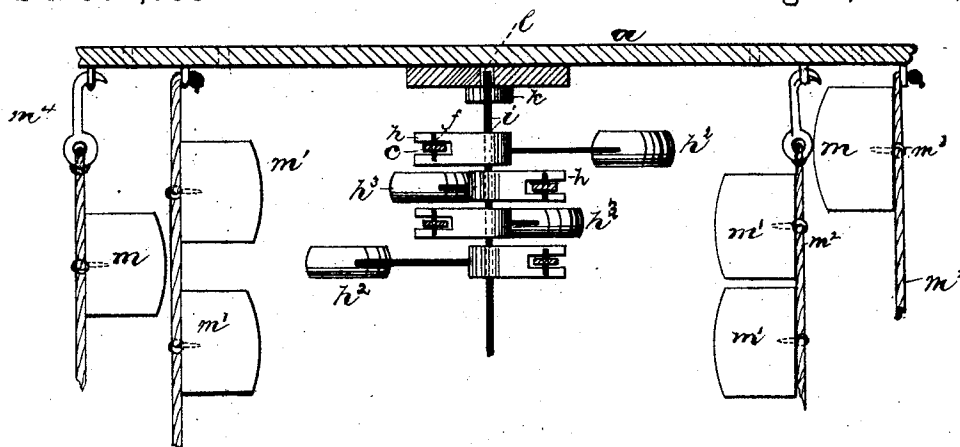


Fig. 2.

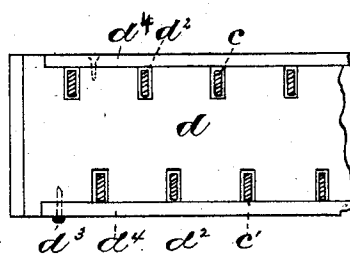


Fig. 8.

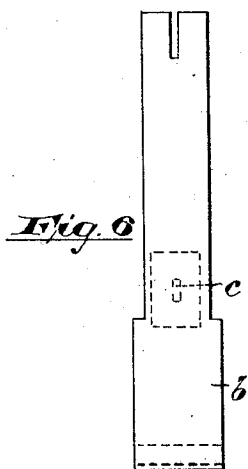


Fig. 6.

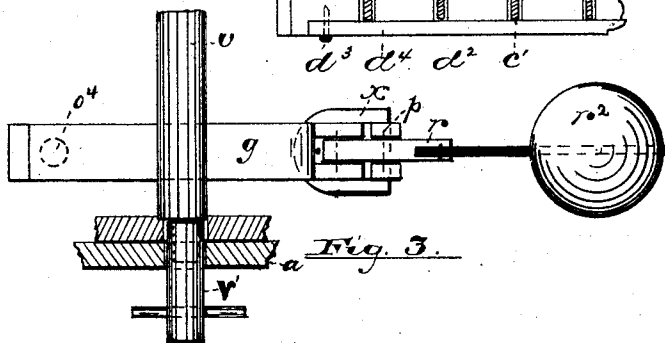


Fig. 3.

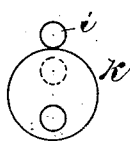


Fig. 4.

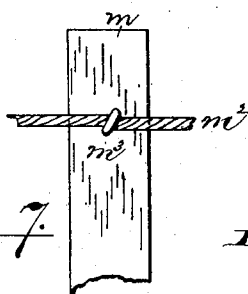


Fig. 7.

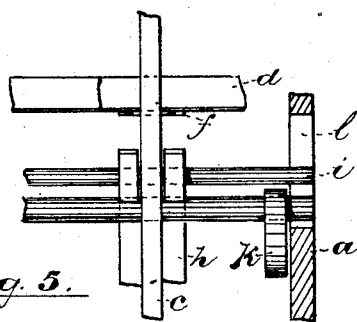


Fig. 5.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

MAX BRAUN, OF NEWARK, NEW JERSEY.

## XYLO-METALLOPHONE PIANO.

SPECIFICATION forming part of Letters Patent No. 367,955, dated August 9, 1887.

Application filed September 25, 1886. Serial No. 214,495. (No model.)

*To all whom it may concern:*

Be it known that I, MAX BRAUN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Xylo-Metallophone Pianos; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide in one instrument a xylophone and a metallophone adapted to be operated either jointly or singly by keys having the arrangement such as is ordinarily found in pianos or organs, and to provide a simple, effective, and inexpensive mechanism to accomplish the said result with the exercise of but little trouble or effort.

The invention consists in an improved musical instrument combining therein a xylophone and a metallophone, called, for convenience, a "xylo-metallophone piano," and in the arrangements and combinations of parts thereof, substantially as will be hereinafter set forth, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters represent corresponding parts in each of the several figures of the two sheets thereof, Figure 1 is a side elevation, and Fig. 2 a plan view, parts being broken away to show the constructions of certain portions of a musical instrument embodying my improvement. Figs. 3, 4, 5, 7, and 8 are details of certain parts of said musical instrument, which will be hereinafter more particularly described; and Fig. 6 is a plan view of a key, showing certain details of construction.

In said drawings, *a* is the case of the instrument, which may be the shape of that of an ordinary piano or may be of any other desired form.

*b b'* are the keys, which are or may be rigidly connected to sliding rods *c c'*. Said sliding rods pass through guides *d d'* (said guides being suitably slotted and cushioned with felt) and are provided with springs *e e'* and *e<sup>2</sup> e<sup>3</sup>*. The springs *e e'* bring the keys automatically to their normal position after said keys have

been struck or depressed. The springs *e<sup>2</sup> e<sup>3</sup>* rest upon the levers *g g'*, and serve as cushions to regulate the blow and to relieve the harsh sound which would be the result if the sliding rods *c c'* come in direct contact with the levers *g g'* when the keys are struck.

The sliding rods *c c'* are provided with pins *f* near their upper extremities, said pins engaging the bent levers *h h*. Said levers are cushioned with felt under the said pins and are hung on a shaft, *i*, said shaft working in a slot, *l*, Fig. 5, formed in a piece or fixture of or to the case *a*, and resting on a cam or eccentric, *k*, which is shown in a raised position in Figs. 1 and 4 and in a lowered position in Fig. 5.

When the cam or eccentric *k* is raised and the mechanism supported thereby brought into operative relation, and the key *b* is depressed, the pin *f*, attached to the rod *c*, engages the end of the bent lever *h*, pushing it downward and thus throwing out the opposite end of said lever, to which a hammer, *h<sup>2</sup>*, is attached by a flat spring-wire or other means, and striking a blow on the wooden sounding-bar *m'*. At the same time, by the same movement of the key, the end of the sliding bar *c* engages with the lever *g*, which is pivoted at *o*. The end of said lever is forced down, which raises the opposite end. The latter engages an auxiliary lever, *r*, pivoted at *p*, to the end of which is attached a ball or hammer, *r<sup>2</sup>*, by means of a flat spring; or in any other suitable manner, and thus throwing the hammer *r<sup>2</sup>* downward and striking a blow on the metal sounding-plate *n*, as will be understood.

At or near the end of the lever *g* is attached, by means of a wire, a plate, *x*, covered with felt, leather, or other sound-damper, which rests upon the metal sounding-bar *n* when the hammer is brought automatically to its normal position by the spring *y*, thus cutting off the vibrations, so that they will not interfere with the harmony when the next note is struck. The wire which secures the plate *x* to the lever *g* passes through a suitable slot in the bed or standard *z*, so that nothing will interfere with its free motion when the said lever is operated.

It is preferable that the lever *g* is allowed but a limited movement, being stopped a little short of a complete throw, the remainder

of the throw being accomplished by the spring-wire attached to the hammer  $r^2$ , so that the said hammer will not rest upon the said plate  $n$  after having struck it. The throw of this lever is regulated by stops, one of which, as  $o^3$ , Fig. 1, may be a lug projecting from the standard to which the said lever is pivoted, thus controlling the motion in one direction, and another stop, as  $o^4$ , may be a pin fastened to the bed or standard  $z$  and projecting upward the proper distance, thus controlling the motion in the other direction. The ends of said lever are cushioned with felt, so as when they come in contact with the stops no sound will be produced.

The metal sounding-plates  $n$  are placed on supports cushioned with felt, and are held in place by suitable pins passing through holes in said plates, as in the ordinary metallophone.

The upper levers and hammers need no controlling-springs, because the end to which the hammer is attached is so much heavier than the other that gravity brings them automatically to their normal position after the key has been struck. The hammers  $h^2$ , which strike the inner row of wooden sounding-bars  $m'$ , are stopped at the proper place on their return after having struck the wooden sounding-bars by coming in contact with a stop or brace,  $s$ , cushioned with felt. A thin slat,  $s'$ , also cushioned with felt and fastened to said brace  $s$ , stops the hammers  $h^2$ , which strike the outer row of wooden sounding-bars  $m'$ .

The entire key-board, together with the upper striking mechanism and sliding rods  $c c'$ , &c., is designed to be removable, the frame sliding between guides or ways, as shown in Fig. 1, and stopped at the proper place by pins  $j$ . Thus, when any repair is needed, the key-board, together with the said parts, after the lid or cover  $a'$  of the case  $a$  has been removed, may be taken out by sliding it upward, as will be manifest.

The keys are secured to the sliding rods  $c c'$ , as before referred to, and are slotted at one end, as in Fig. 6, to receive the guiding plates or pins  $t'$ , Fig. 1, which are rigidly fastened to an upper support,  $t$ . By means of said pins the keys are kept from twisting out of place.

The wooden sounding-bars are arranged in four rows, and are hung or held in place by cords, which pass through screw-eyes in the back of said sounding-bars, and are fastened to the sides of the sounding board or case, as shown in Fig. 2. The tension on said cords may be regulated by turning the screw-eyes in the several sounding-bars in either one direction or the other, as a greater or less tension is desired.

When it is desired to play only the metallophone, the cam or eccentric  $k$  is turned, by means of a key or thumb-piece, one-half a revolution, as shown in Fig. 5, thus allowing the shaft  $i$ , carrying the levers  $h$ , to drop, so that pins  $f$  will not engage them when the keys are depressed; or if it is desired to sound only the xylophone the cam or eccentric  $k$  is turned up

in the position shown in Fig. 1, and the cam-shaft  $v$  is turned, by means of a key or thumb-piece,  $v'$ , so as to throw the levers  $g g'$ , &c., downward, and when they are in this position the ends of the sliding rods  $c c'$  will not engage with said levers, as will be evident.

I do not limit myself to the exact construction of parts herein shown, as it is manifest that changes may be made in that particular without departing from the scope of this invention.

I am aware that bars of wood, metal, or glass have been employed in connection with hammers operated by keys arranged after the fashion of those of a piano or organ, and I do not claim the same herein; but the improved device I unite in one instrument having keys, a series of metal sounding-bars, and a series of wooden sounding-bars, and means whereby, when the said keys are struck, the said bars, producing differing qualities of tone, are caused to sound simultaneously, and the said differing qualities blend or harmonize and produce a quality of music such as cannot be obtained by any other means by a single player or musician. An instrument combining a series of wooden and a series of metallic sounding-bars capable of producing their characteristic sounds, a series of hammers for causing said bars to produce said sounds, and keys, resembling in general arrangement and mode of operation those of an ordinary organ or piano, for actuating both the wooden and metal bars simultaneously, I have herein termed a "xylo-metallophone," and such a device I believe to be new.

Having thus fully described my invention, what I claim as new is—

1. In a xylo-metallophone piano, the combination, with a suitable case, keys, hammers, and sounding bars and plates, of levers supporting said hammers, bars or rods connecting with said keys, and intermediate springs, all arranged and operating substantially as set forth.

2. In a xylo-metallophone piano, the combination, with a suitable case, xylophone sounding-bars, and metallophone sounding-plates, of mechanism to strike or cause said sounding bars and plates to vibrate, consisting, essentially, of sliding bars and guide-plates, said bars being connected with suitable keys and provided with pins or lugs near their upper extremities, said pins being adapted to engage bent levers, said levers being provided with hammers and being hung on a shaft which works in slots and is held in a raised position by cams or eccentrics, and springs  $e^2 e'$  at the lower extremities of said sliding bars, said springs  $e^2 e'$  engaging levers provided with damper-plates, as  $x$ , stops, as  $o^2 o'$ , cushions of felt  $g^3 g'$ , and springs  $y y'$ , said levers being slotted at one end and engaging auxiliary levers, the latter being provided with hammers or balls, all said parts being arranged and adapted to operate substantially as set forth.

3. In a xylo-metallophone piano, the combi-

5 nation, with a series of levers, *g g'*, and hammers operated by the same, of a cam-shaft, *v*, adapted to depress said levers and throw them from operative relation to the keys of said instrument, substantially as set forth.

10 4. The combination, with a suitable case, of xylophone sounding-bars suspended from strings or stretchers therein, levers, as *h*, provided with hammers, as *h'*, and keys and bars *c*, for operating said levers when said keys are depressed, and springs *e*, all said parts being arranged and adapted to operate substantially as set forth.

15 5. In a xylo-metallophone piano, the combination, with rods *c c'* and keys, of a guide-plate having suitable recesses or slots in the edges thereof and keeper-strips *d'*, to hold said rods in position, substantially as and for the purposes set forth.

20 6. In a xylo-metallophone piano, the combination, with the rods *c c'* and keys for operat-

ing the same, of a guide-plate having suitable recesses or slots in the opposite edges thereof and keeper-strips suitably felted or cushioned, all said parts being arranged and combined substantially as and for the purposes set forth. 25

7. In a xylo-metallophone, the combination, with wooden and metal bars and plates, hammers to engage the said wooden bars, and hammers to engage said metal plates, of levers to actuate said hammers, sliding bars to actuate the levers of the hammers of the said wooden plates and those of the said metal plates simultaneously, and keys to depress said sliding bars, substantially as set forth. 30

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of September, 1886. 35

MAX BRAUN.

Witnesses:

WM. S. CORWIN,  
CHARLES H. PELL.