

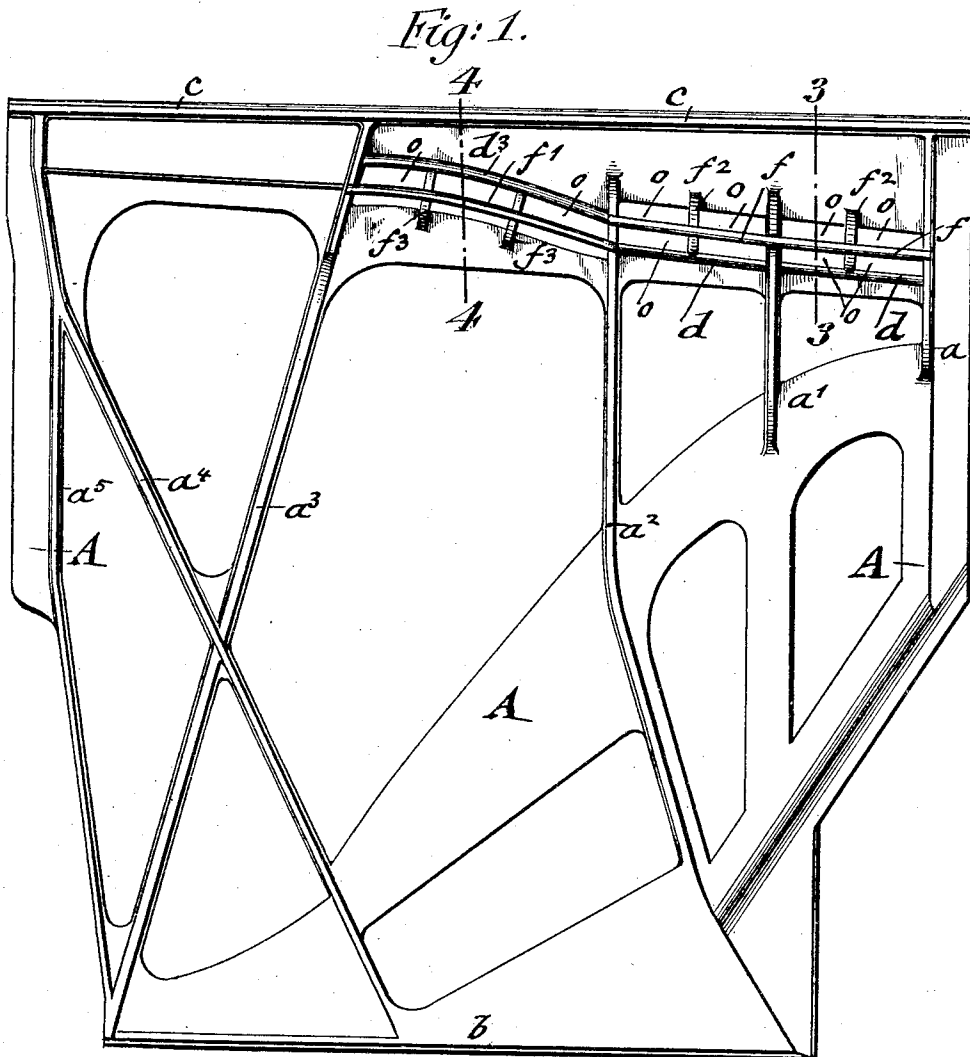
No. 878,926.

PATENTED FEB. 11, 1908.

H. ZIEGLER.
STRING FRAME FOR UPRIGHT PIANOS.

APPLICATION FILED JULY 24, 1906.

2 SHEETS—SHEET 1.



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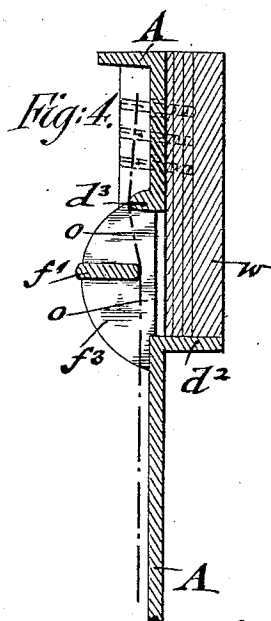
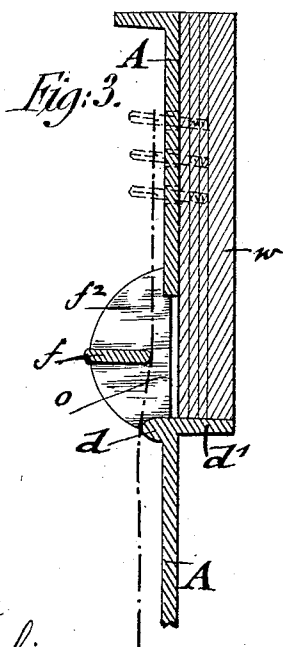
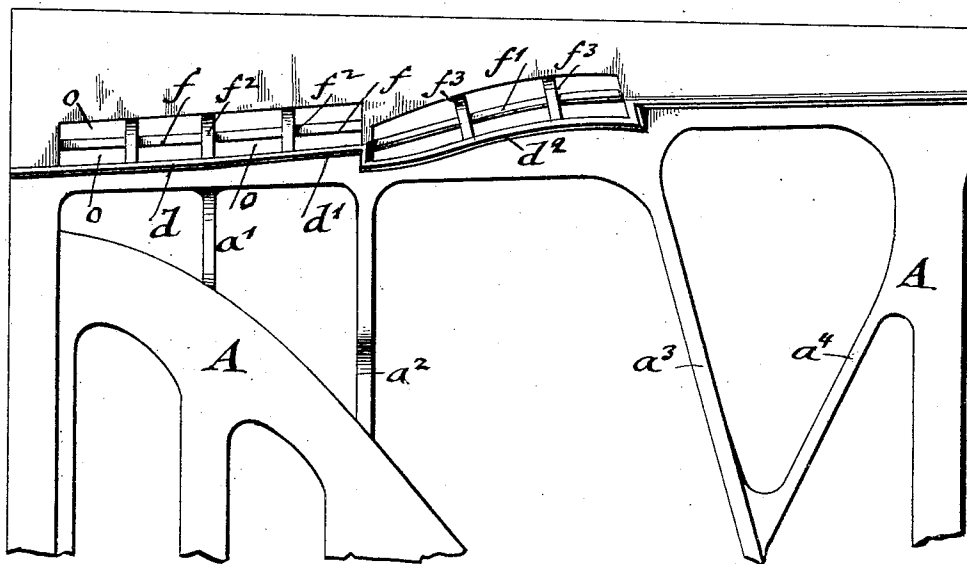
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY ZIEGLER, OF NEW YORK, N. Y.

STRING-FRAME FOR UPRIGHT PIANOS.

No. 878,926.

Specification of Letters Patent.

Patented Feb. 11, 1908.

Application filed July 24, 1906. Serial No. 327,517.

To all whom it may concern:

Be it known that I, HENRY ZIEGLER, a citizen of the United States, residing in New York, in the borough of Manhattan, county and State of New York, have invented certain new and useful Improvements in String-Frames for Upright Pianos, of which the following is a specification.

This invention relates to certain improvements in the string-frames of upright pianos, whereby a clearer tone is obtained in the treble and a fuller and rounder tone in the middle strings, the improvements being more especially designed for the upright piano for which Letters Patent were granted to me on November 21, 1893, No. 509,111, whereby the sounding portions of the upright piano are relieved to some extent of the strain which the string-frame exerts thereon, with the result that a marked improvement in the tone of the piano and a greater aptitude for standing in tune is obtained.

The invention consists of certain improvements in string-frames for upright pianos which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front-elevation of my improved string-frame for upright pianos, Fig. 2 is a rear-elevation of the upper portion of the string-frame, and Figs. 3 and 4 are vertical transverse sections on lines 3, 3 and 4, 4, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

In the drawings A represents a string-frame for upright pianos, which is made of cast-steel or other suitable metal and of that class in which the wrest-plank and hitch-pin portions are cast integral therewith. The string-frame is provided with a number of strengthening brace-ribs a , a^1 , a^2 , a^3 , a^4 , a^5 , etc., of which the brace-ribs a^3 , a^4 , a^5 extend from the bottom-rib to the top rib c , while the brace-ribs a^1 , a^2 which are not extended up to the top-rib c , but cut short along the edge of the wrest-plank portion of the string-frame for the purpose of reducing the weight of the string-frame.

The string-frame A is provided between the side-ribs a and the brace-ribs a^1 and a^2 with a capo d'astro bar f for the treble strings and between the brace-ribs a^2 and a^3 with an inverted scale-rib f^1 for the middle strings. The capo d'astro bar f is located adjacent to the scale-rib d and parallel therewith, and is

cast, like the inverted scale-rib f^1 , integral with the string-frame, and separated from the wrest-plank portion and the portion of the string-frame below the same by narrow openings o which are arranged at both sides of the capo d'astro bar f and scale-rib f^1 . The scale rib d is formed on a strengthening flange d^1 extending across the frame back of the scale-rib and forming a support for the wrest-plank. The scale-rib d is connected intermediately at points between the ribs a , a^1 , a^2 by means of short transverse braces f^2 with the capo d'astro bar f and the wrest-plank portion of the string-frame.

The inverted scale-rib f^1 for the middle strings is likewise connected by transverse braces f^3 with a strengthening flange d^2 located under the upper edge of the string-frame portion for the middle strings at the rear of the string-frame, as shown in Figs. 1 and 4. The braces f^2 , f^3 impart strength and resistance to the capo d'astro bar f and the inverted scale-rib f^1 so as to prevent any slight "giving" of the same under the tension of the treble and middle strings exerted on the same.

The treble strings are passed over the scale-rib d and below the rounded-off face of the capo d'astro bar f to the tuning-pins, as shown in Fig. 3, while the middle strings are passed below the rounded-off face of the inverted scale-rib f^1 and over an edge-rib d^3 on the wrest-plank portion to the tuning-pins, as shown in Fig. 4. By thus reversing the stringing of the middle strings relatively to the treble strings, the tension of the middle strings on the string-frame is exerted in a different direction from the tension of the treble strings on the treble portion of the string-frame, whereby the sounding bodies are greatly relieved of strain and permitted to vibrate freely. Another advantage of the arrangement described is that a small additional space is obtained at the upper part of the string-frame, whereby either the length of the scale may be increased for a given height of upright piano or the size of the piano for a given scale decreased. The greater stiffness imparted to the capo d'astro bar of the treble strings, and the inverted scale-rib of the middle strings, by the transverse braces, in connection with the distribution of the tension exerted on the string-frame, forms the essential novelty in the construction of the string-frame. The strengthening flange for the wrest-plank portion,

which in my prior patent referred to as necessary, is entirely dispensed with and the wrest plank *w* extended down to and abutting against the strengthening flanges *d*¹ and *d*² located respectively under the scale-rib for the treble strings and under the upper edge of the string-portion of the string-frame for the middle strings, the scale-rib *d* being in the present construction made integral with the string-frame and not supported on the wrest-plank as in the prior patent referred to. The result of the improved construction of the string-frame is a freer and rounder tone in the treble strings and in the middle strings, which is due to the rigid bracing of the capo d'astro bar *f* and of the inverted scale-rib *f*¹, and to the distribution of the tension exerted by the treble strings on the string-frame by the tension exerted by the middle strings on the same.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A string-frame for upright pianos provided with a capo d'astro bar for the treble strings and an inverted scale-rib for the middle strings, both made integral with the string-frame, openings at each side of the capo d'astro bar and inverted scale-rib, short transverse braces for the capo d'astro bar and the inverted scale-rib extending across the openings formed at each side of the same, a scale-rib located below the capo d'astro bar in the treble portion, and an edge-rib located above the inverted scale-rib in the middle portion of the string-frame.

2. A string-frame for upright pianos provided with an integral capo d'astro bar in the treble portion and an inverted scale-rib in

the middle portion of the string-frame, openings at each side of the capo d'astro bar and inverted scale-rib, a scale-rib located below the capo d'astro bar in the treble portion, an edge-rib located above the inverted scale-rib of the middle strings, transverse braces extending across the capo d'astro bar of the treble and the inverted scale-rib of the middle strings and across the openings at both sides of the same, a strengthening flange back of the scale-rib of the treble strings, and a strengthening flange extending along the upper edge of the middle-string portion at the rear of the string-frame.

3. A string-frame for upright pianos provided with brace-ribs, a capo d'astro bar for the treble strings, openings at each side of the capo d'astro bar, and short transverse braces made integral with the string-frame and extending across the openings at each side of said capo d'astro bar intermediately between said brace-ribs.

4. A string-frame for upright pianos provided with brace-ribs, an inverted scale-rib for the middle strings made integral with the string-frame, openings at each side of said scale-rib, and short transverse braces made integral with the inverted scale-rib and extending across the openings at each side of the scale-rib intermediately between said brace-ribs.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

HENRY ZIEGLER.

Witnesses:

PAUL GOEPEL,
HENRY J. SUHRBIER.