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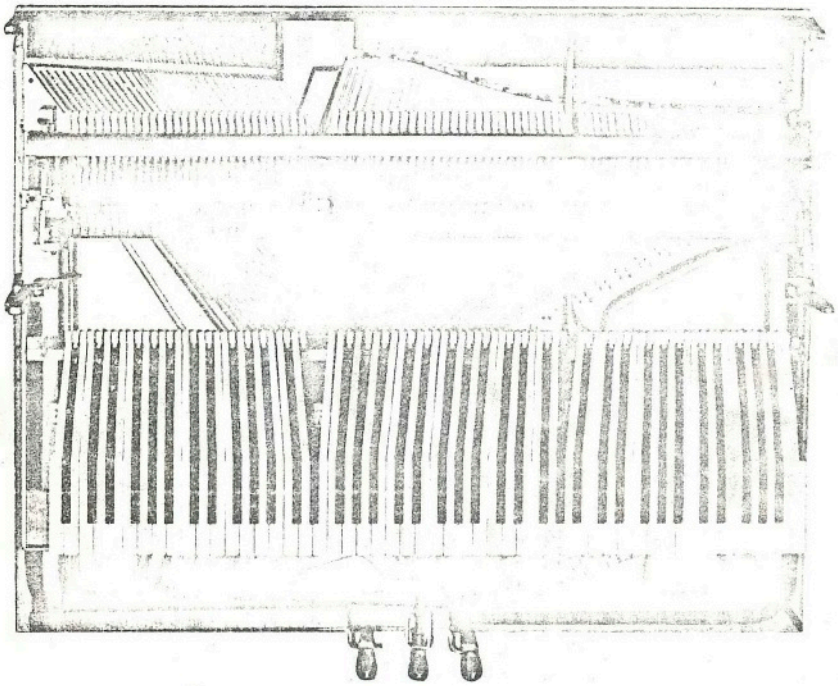

Thomas

PIANO SERVICE MANUAL

Price $4.50

HERE IT IS!

THE PIANO TECHNICIAN'S DREAM PIANO

by Thomas

FOR TECHNICIANS - BY TECHNICIANS

Forward . . .

Since the great piano-builders developed the piano forte in the last century, there has in principle been little change and many contemporary products are actually only continuations of designs a hundred or more years old.

The new Thomas Piano signifies a new instrument with more technical innovations than have been applied in piano building during the past hundred years.

The aim of the maker of the New Thomas Piano is to provide a modern, up to date, leader and criterion for the home piano. The means by which this is to be accomplished are:

1. Easier maintenance and repair for the piano technicians.
2. More quality for the purchaser's money.
3. Constant research and development of up to date theories and sophisticated materials for use without compromise.

The New Thomas Piano is a marvel of precision in a musical instrument; hence it is of utmost importance that only skilled piano technicians, thoroughly experienced in the profession, should attempt to repair or adjust any part of the piano. Regular, efficient care will provide a fine family instrument for many lifetimes.

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GENERAL DISCUSSION

TECHNICAL SCIENCE AND ART

During the past hundred years there have been more technical changes in the world than in all the previous centuries.

Metallurgy developed new and strong light metals, which subsequently found application in costly apparatus; chemistry developed plastics, the use of which progressed by leaps and bounds in all kinds of fields; in technical science, refinement increased, but piano-manufacturers implemented little, if any, of this.

From preliminary investigations and resultant designs the New Thomas Piano has now been developed. For two years a team of technicians worked on this project; on metallurgical and chemical subjects there has been co-operation with several large industrial establishments, as well as with institutions such as the Organization for Applied Scientific Research.

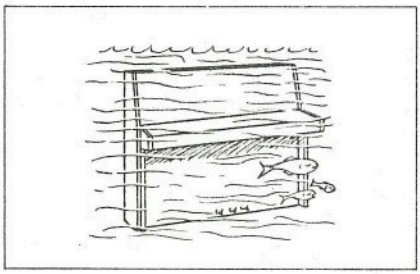
The question now is whether art is served by technical development.

In answering this question, it should be borne in mind that the development of the clavichord to the piano-forte coincided with development of the compositions. The composers had more possibilities open to them with the piano-forte.

Technique thus serves art, and further developments in technique can serve art even better.

RESISTANT TO ANY CLIMATICAL CONDITION

The technical details, which guarantee that the parts mentioned cannot be adversely affected by extreme climatical conditions, etc. have been referred to under subsequent headings. Nevertheless it is important to summarize these points to ensure that they do not escape attention. Soundboard and wrestblock are guaranteed crack-proof. The soundboard is firmly attached to the frame by means of one of the most modern types of synthetic glue and not, as previously, attached only by screws.



Action and keyboard have nonsticking bearings. The few causes of trouble which could occur in the modern piano under certain climatical conditions are thus virtually eliminated.

EASY TO MOVE ABOUT

Previously pianos weighed from 385 to 500 lbs. and large ones sometimes 600 lbs.; the New Thomas Piano weighs less than 300 lbs. This has been achieved by the light sounding-case and the self-supporting frame of light, modern metal.

Its light weight not only makes it easier to shift or move, but is also advantageous to the piano dealer; e.g. less expensive to deliver into buildings and homes.

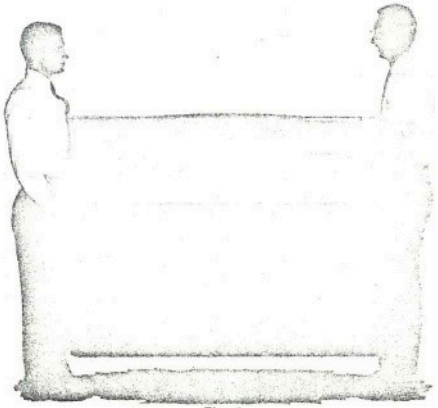


Fig. 1

ACTION (See Fig. 4, Pgs. 4 & 5)

Both the action rail and the set-off rail, damper rail and hammer-rest rail are of hard drawn aluminum instead of wood. The structure is consequently warp-proof.

The term "plastic" can be used to indicate just as many types of plastics as there are types of "wood". Oak is strong, but it cannot serve as a violin cover, or even as a bookshelf, for in the long run the shelf would sag. Fir or Pine is better for that purpose. Other types of woods are used in water, because of their resistance to it.

In the same way, there are many types of plastic, and the difference between the types is much greater than the difference between types of wood. There are simple, cheap types for less durable articles, but there

are, also, sophisticated types . . . one of which is used for parts in the New Thomas Piano.

In technical applications, plastics have made great strides. Many shafts rotate in plastic bearings. Plastic cog-wheels are found in all kinds of intricate apparatus. In modern technical developments, plastics are now playing an indispensible part.

For years plastics have also been used in the manufacture of piano actions. In the New Thomas Piano plastics are utilized more fully for the first time The advantages of plastic parts are that whereas previously screwed wooden parts sometimes worked loose owing to the shrinkage of the wood, this is no longer possible as a result of the screwless assembly with clamp springs.

KEYBOARD (See Fig. 4, Pgs. 4 & 5)

As in the action, all the structural parts are of hard drawn aluminum and therefore shrink-proof and warp-proof. The wooden console and the wooden keyboard frame have been dispensed with. The keys, previously made of wood on to which a smooth ivory covering was glued, had the disadvantages of quickly becoming dirty and yellow from absorption of skin oils. The keys on Thomas pianos are made with a type of plastic which surpasses ivory in every respect. They are completely shaped on the sides, thus eliminating soiled or uneven wooden sides. Better shaped corners provide a more pleasant "touch". Regulation of the keyboard is more stable because of screw adjustment . . . instead of relying on paper underlays or washers. While the aforegoing already indicates vast improvements, the most important feature, however, is the fact that the key no longer balances on a pin in a hole in the wood, but on a small steel spring. This completely eliminates wear.

BETTER TOUCH AND GREATER EXPRESSION

To make this clear, we must pause to consider the law of the "Mass" action. Boxers train with light punch-bags, filled with horsehair. It is obvious that a punch against a leaden ball would hurt the fist. To put it differently: imparting sudden velocity to lead requires too much force.

It is not generally known to laymen that when playing an ordinary piano the fingers were always "boxing against lead". The keys are, in fact, loaded with lead to make them fall back to rest. For the repetition of the stroke this lead is necessary with regular keys.

In the New Thomas Piano greater repetition with virtually no effort is ensured by the steel spring of the balance point.

As a result, the stroke is more subtly felt and there is considerably more sensitive contact of finger and key; in short the "touch" is improved, which results in "greater expression" and a greater contrast between "forte" and "piano".

The pianist finds it less exhausting with this radical improvement, especially when playing quickly and loudly or for a long period of time.

BETTER REPETITION

Repetition is easier and can take place much faster, because less "mass" has to be set in motion when striking. Playing the Thomas Piano is truly an exceptional pleasure!

IMPROVED TONE

The question may now arise whether the character of the tone has been affected adversely by these revolutionary changes. **It must be emphasized that the essential tone-forming factors remain unchanged.**

Thomas' wooden reverse-crown soundboard, now designed and applied as basic laws of physics demand, results in a soundboard that does not change in tension, shape and tone. The board is guaranteed crack-proof. (Fig. 2)

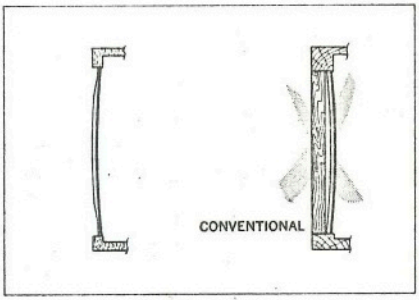


Fig. 2

WRESTBLOCK

Various systems have been developed in the piano industry.

1. Oldest design; beech block with transverse layer.
2. Later design: the same block, but now situated behind a metal frame. The pins go through the iron frame. In most cases the hole in the iron frame is then filled with a small wooden ring (dowel).
3. The new Thomas design is essentially the same as described under 2 above, but with a block which is permanently laminated in longitudinal and transverse layers of Maplewood . . . time-proven to be the best wood for this purpose under the most extreme climatic conditions.

The pins do not, however, run through loose wooden dowels, but though a single plate consisting of beech layers compressed under very high pressure and impregnated with synthetic resin.

The advantage of this method is that the pins are set tighter and, consequently, are less susceptible to atmospheric influences. Consequently the piano keeps better tune. (Fig. 3)

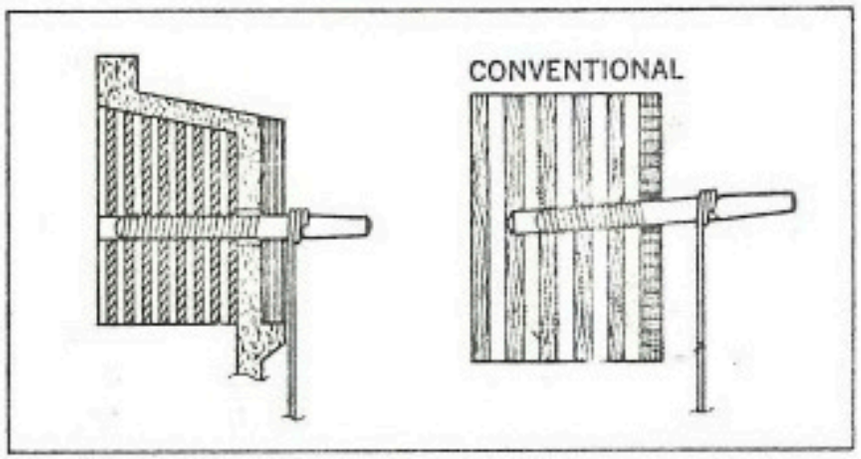


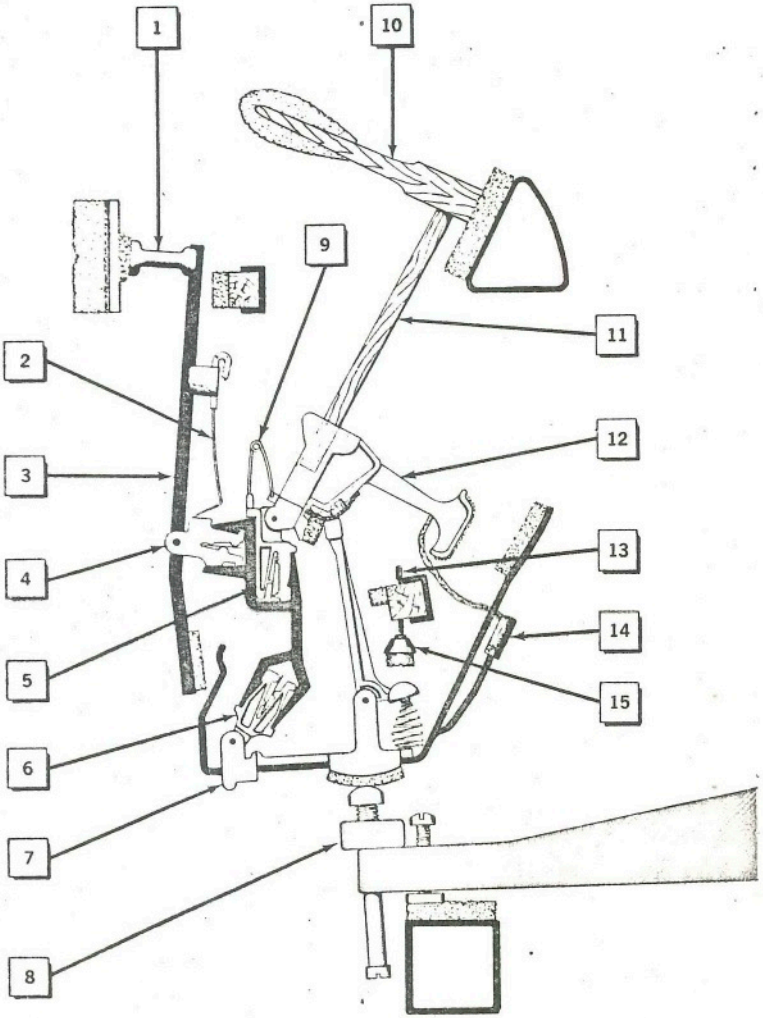
Fig. 3

WHAT DOES THE NEW THOMAS PIANO MEAN TO THE PIANIST?

All these developments would be of little importance to you and to us if there were no immediate advantages attached to them for the discriminating pianist.

Summarized concisely and simply, the New Thomas Piano means:

1. Improved tone;
2. Greater durability;
3. Resistance to any climatical condition;
4. Better touch and greater expression;
5. Less pianist fatigue;
6. Better repetition;
7. Greater ease of instrument moving;
8. Better tune-keeping.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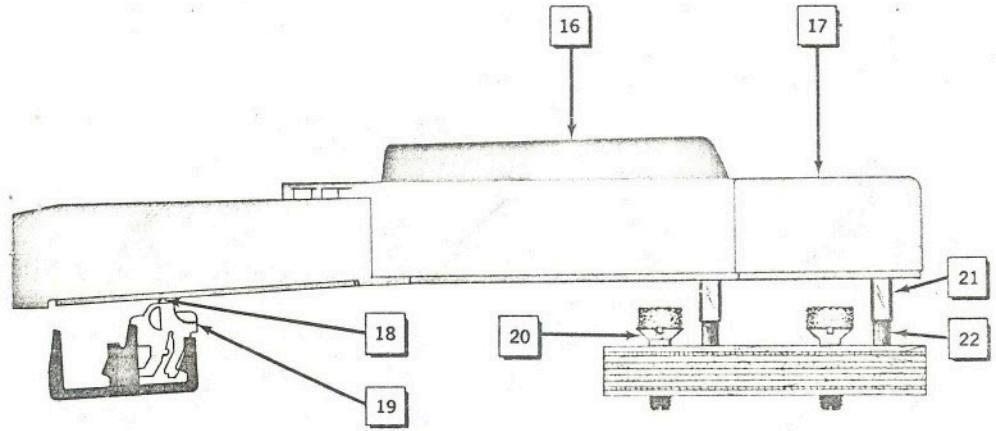
NOMENCLATURE

Fig. 4

NUMBER	NAME
1	DAMPER
2	DAMPER SPRING
3	DAMPER LEVER
4	DAMPER LEVER FLANGE
5	HAMMER BUTT FLANGE
6	WHIPPEN FLANGE
7	WHIPPEN
8	CAPSTAN SCREW ASSEMBLY
9	HAMMER BUTT SPRING
10	HAMMER
11	HAMMER SHANK
12	HAMMER BUTT
13	JACK LET OFF SCREW
14	BRIDLE TAPE WITH CAP
15	JACK LET OFF BUTTON
16	SHARP KEY
17	WHITE KEY
18	KEY FULCRUM SPRING
19	KEY FLANGE
20	KEY STOP BOLT
21	KEY GUIDE PIN SLEEVE
22	KEY GUIDE PIN



TECHNICAL

BASIC MEASUREMENTS

Scale: Number of notes	Wire size
2 (lower treble)	copper wound
5	#20
4	#19½
2	#19
2	#18½
2	#18
4	#17½
4	#17
4	#16½
4	#16
4	#15½
4	#15
6	#14½
6	#14
4	#13½

Tuning Pins: 1/0 x 2½" — with reverse thread
Center Pins: 20½ (.051)
Key Dip: ⅜"
Hammer Travel: 1¾"
Hammer let off: ⅛"
Back check of hammer: ⅝"
Damper lift start: ½ of key stroke
Damper lift: ¼" max.
Capstan adjust: 1/32 max. lost motion

HELPFUL HINTS

To remove action: release spring clips at top of each side of action, and tilt away from strings until it rests in brackets. (Fig. 5)

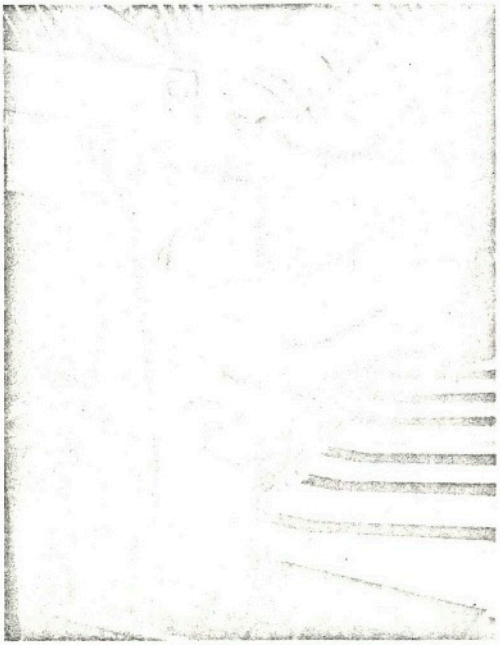


Fig. 5

To adjust spoons, use same procedure as in removing action. Adjust while action rests in brackets. (Fig. 6)

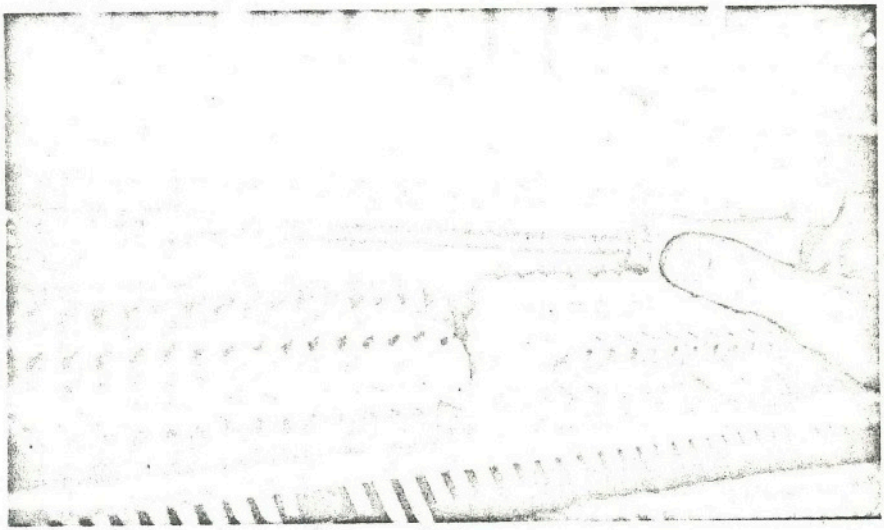
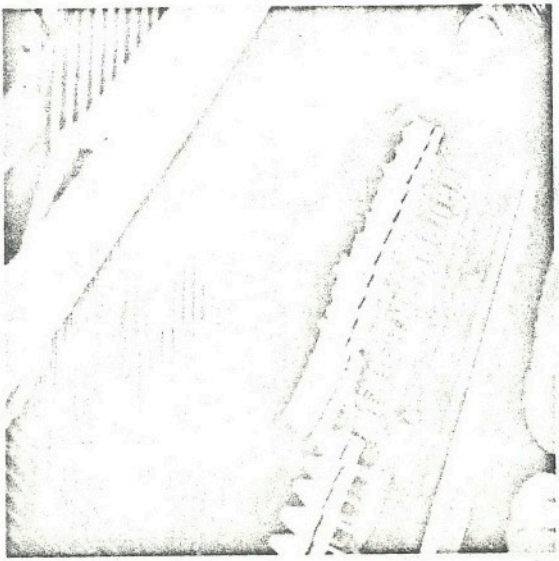


Fig. 6



To tune, remove muffler strips, release action and tilt forward, insert temperament strip in strings below damper level, replace action and tune with No. 1 star head. (Fig. 7)

Fig. 7

To remove any flange, insert 3/16" diameter screw driver between aluminum channel and flange, then twist to release. All flanges are snap-on type and can be aligned before or after inserting in rail. (Fig. 8)

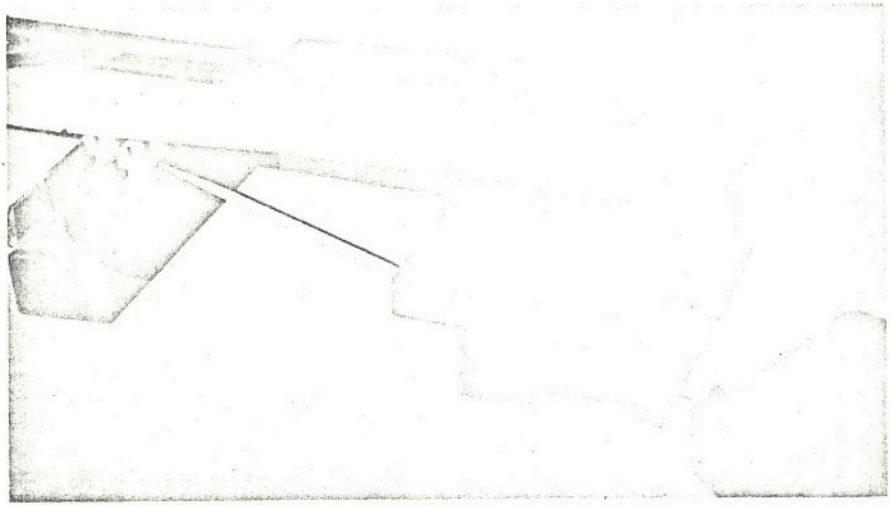


Fig. 8

Back check and bridle posts can be bent for proper adjustment. (Fig. 9)

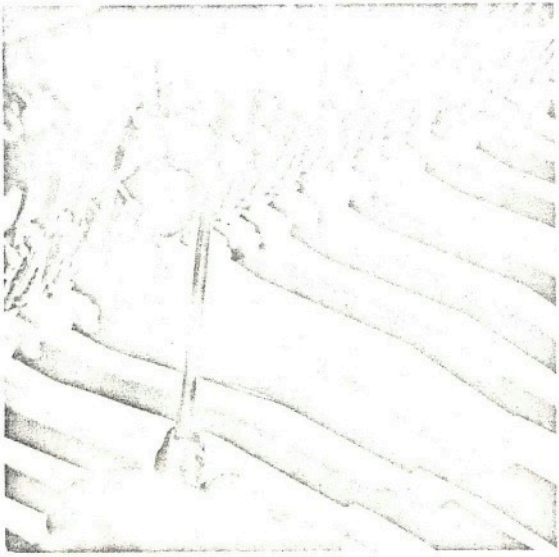


Fig. 9

Back of hammer head, instead of shank, rests on the hammer rail. (Fig. 10)

Fig. 10

Special regulating tool No. 42 should **always be used** for the key leveling and capstan adjustments. (Fig. 11)

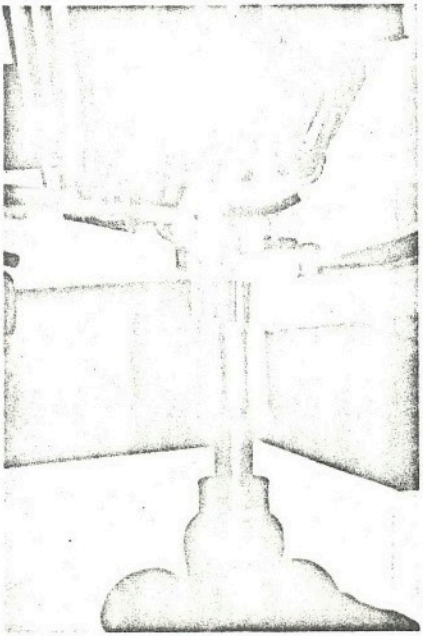


Fig. 11

Key dip is adjusted by turning bolt located beneath each key directly under front of keybed. Use standard screw driver for this adjustment. (Fig. 12)

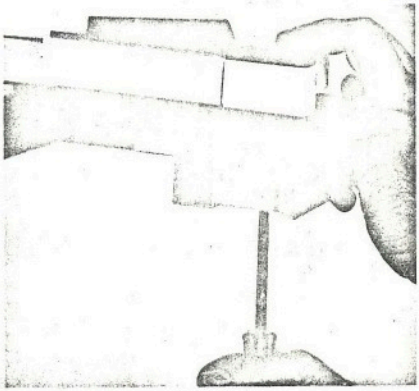


Fig. 12

To repair key, use any good acetone-base glue on break and hold firmly in position until set.

To replace string: remove coil, turn pin **counter clockwise** (it is reverse threaded) until string hole is almost flush with pin block facing. Insert new string and turn pin **clockwise.** (See Fig. 3, Pg. 3)

Key leveling should be done with action removed, using very light downward pressure on special regulating tool. Lost motion must be corrected every time key level is changed. (Fig. 13)

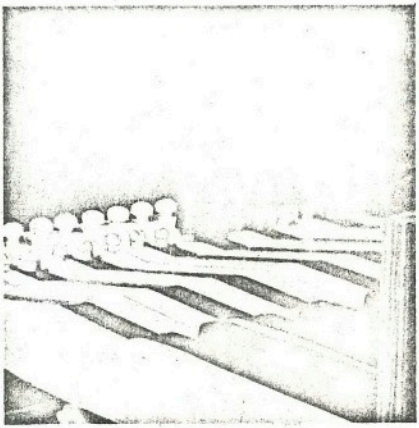


Fig. 13

CENTERPINS

The centerpins are manufactured to a tolerance of ±.001 accuracy in diameter, ten times greater accuracy than centerpins on other pianos. Centerpins of other pianos are not always exactly round and the diameter inaccuracies can actually be felt over entire length of wire.

Centerpins in all Thomas pianos are made of solid NEW silver; conventional nickleplated brass centerpins tend to actually increase in diameter due to electrolytic action when subjected to humid conditions.

POINTS OF FRICTION (See Fig. 4, Pgs. 4 & 5)

Friction in the action of the Thomas Piano has been reduced to a minimum. Rotation of centerpins in their mating parts made of special plastic produces practically no friction. In conventional pianos considerable friction may be produced between capstan screw and whippen, and capstan screws travel some distance, so to speak, over the lever. Technicians know that this distance is smallest when this point of contact between capstan screws and whippen (with the key halfway down) lies exactly along the line of the fulcrums of whippen and key. It hardly needs to be pointed out that this is the case with the Thomas Piano, but the same thing occurs with the point of friction between the spoon of the whippen and the damper. Here the point of friction must, therefore, lie along the line of whippen and damper-centerpins. With ordinary actions this can scarcely be accomplished because of the thick wooden rail. This can be determined accurately on the Thomas.

SPOON

Usually the spoon is indeed shaped like a spoon, causing it to penetrate into the felt of the damper and increasing wear. With the Thomas Piano the bent shape is oblong in the direction of the rolling movement, thus causing a minimum of wear. (Fig. 14)

Fig. 14

TUNING PINS (See Fig. 3, Pg. 3)

The tuning pins are more firmly supported than are ordinary dowels in other pianos. The coil of the spring on the conventional wrestpin rests directly against this support, thus against the wrestplank, thus tending to jam when tuning. This condition is eliminated in the Thomas Piano. The pin has left-hand instead of right-hand threads, so that when turning the coil on full turn the tuning pin comes out 1/25 inch, just enough to allow for one extra steel winding.

The advantage of the closer support is that bending of the pin has been avoided altogether, and the string pressure is felt almost wholly on the pin block, not the pins.

HAMMER RAIL (See Fig. 10, Pg. 10)

The hammer rail supports the heads, not the shanks. Supporting the shanks is disadvantageous in that the thin round shank penetrates into the felt, causing irregularities. Hence, it is better to support the flat head, also because the surface of the head is greater than the point of contact of the round shank. With other ordinary pianos it would be impossible for the hammer rail to support the head, because the hammer rail moves with an arc different from that of the hammer and the felt would rub along the head. With the Thomas Piano care has been taken to ensure that the arc of the hammer rail is the same as that of the hammer, so that no friction occurs and the head can be supported.

DAMPER RAIL, SET-OFF-RAIL

The damper rail and the set-off rail are both reinforced with aluminum, which greatly enhances the stability of regulation.

PEDALS

The pedals are constructed without hinges, thus precluding the annoying squeak. (Fig. 15)

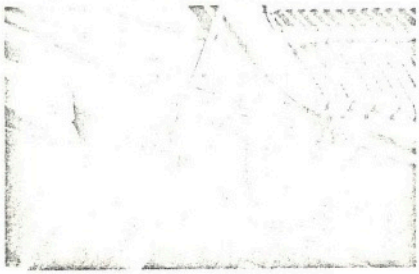


Fig. 15

ADJUSTMENT OF TRAVELLING HAMMERS

Another example of the precision of the Thomas Piano. . . . It is generally known that in a wooden action the hammers do not travel straight when the flanges are screwed on the rail. To this end pieces of paper are glued between the flanges and the rail as necessary to maintain alignment as the hammers approach strings. In the case of the Thomas Piano the flanges are placed in the rails and all 88 travel straight automatically. It is impossible for the flange screws ever to come loose again, as sometimes occurs when flanges dry out in the wooden action.

TROUBLE-FREE PERFORMANCE

One of the greatest advantages for the technician is, of course, trouble-free performance, primarily classified as follows:

1. Flanges cannot come loose.
2. The rail does not warp.
3. No shrinkage or swelling occurs.
4. No paper discs are used, which frequently shrink or swell.
5. Regulation is much more stable; changes only as a result of wear.
6. Centerpins continue to operate smoothly, even in most humid climates. This has been demonstrated at numerous exhibitions, where the action was placed under water in an aquarium and continued to play without any trouble.

SERVICE AND REGULATION

When studying the Thomas Piano any qualified technician will see that the regulation of the action does not differ a great deal from that of any other piano. Regulation is just somewhat simpler and quicker.

The capstan-screws (pilots), for example, can be turned continuously underneath the keyboard without having to insert and withdraw the tool each time. (See Fig. 11, Pg. 10)

The depth of the key can be regulated by easy access underneath the keyboard and consequently the keys need not be removed every time. (See Fig. 12, Pg. 10)

The keys can also be left in position when they are being levelled off; an adjustment screw is provided at the end of each key. (See Fig. 13, Pg. 10)

DIMENSIONS FOR REGULATION AS NORMAL

It is appreciated that opinions among experts differ on stroke, set-off, depression depth, etc., and a slight variation in these dimensions can be allowed, provided it is kept within the following limits:

Stroke of hammer	1¾"-1⅞"
Set-off	1/16"-⅛"
Depth of touch	⅜" ± 1/32"

REMOVAL OF FLANGES

All flanges have a slot just above the rail. When a properly fitting screwdriver is placed in this slot the flange can be removed from the rail by slightly turning the screwdriver. Conversely, the flange can be simply pressed back again until it clicks in position. (Fig. 16)

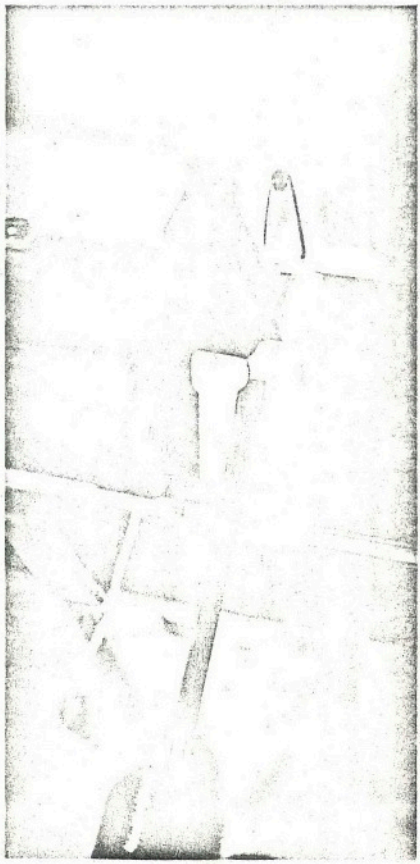


Fig. 16

FLANGE ADJUSTMENT

Sideway adjustment is made with aid of a screwdriver. Flanges can be moved by sliding in rail. (Fig. 17)

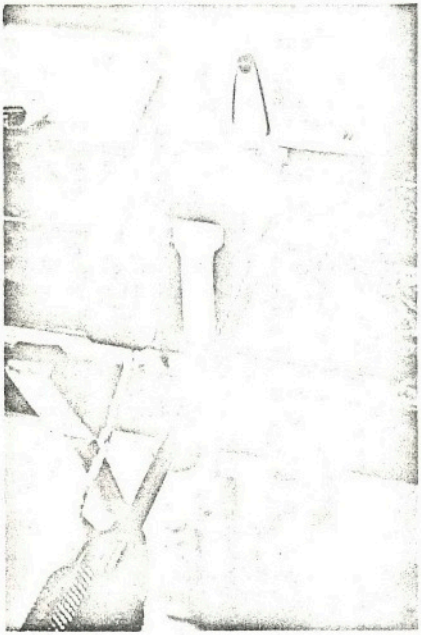


Fig. 17

BRIDLE TAPE

The bridle tape can be removed by pulling the cap off a stem, upwards. This cap is moulded around the stem. If it is a little tight the first time, it can be pressed gently between a pair of flat-nosed pliers to loosen it.

REPLACING CENTERPINS

The centerpins can be replaced just as simply as any other type of centerpin. To be able to find the nearest size it is necessary to have a precision micrometer. If this is not available, the centerpin that has been removed can first be placed in the part in which the pin runs freely to gain an impression of the tightness of fit. Then FIND A SIZE WHICH has a slightly lighter or heavier fit in the part concerned to suit requirements. As the degree of precision is very high, care should be taken to select the nearest size. It will seldom occur, however, that the centerpins wil have to be replaced, as they are practically unaffected by wear.

If transported in a temperature below freezing, the piano should be allowed to reach normal temperature before use, as centers may be slightly sluggish in severe frost.

WREST PINS

A string can be removed in the normal manner by turning the pin counter-clockwise, and it can be replaced by turning the pin clockwise. When a pin has to be removed altogether this should be done by turning it clockwise. (See Fig. 3, Pg. 3)

REPLACEMENT PARTS

When a part is broken accidentally or as a result of inexpert treatment it usually can be glued together with little difficulty. Ordering a replacement from the factory is recommended, however.

Felt can be replaced with a glue containing acetone as solvent.

GENERAL

Should any further problems arise, the makers will only be too pleased to furnish information and assistance. It is quite understandable that an entirely new piano of this type will give rise to queries and the makers attach great value to giving their fullest cooperation.

PARTS LIST

NUMBER	DESCRIPTION
1	Action clip 7/8"
2	Action clip 1"
3	Whippen (complete)
4	Whippen snap flange
5	Hammer butt complete
6	Butt snap flange
7	Butt spring — doz.
8	Bridle strap (with cap) per 100
9	Hammer shank (cut to size) doz.
10	Damper lever (complete)
11	Damper lever spring (.031) doz.
12	Damper lever spring (.035) doz.
13	Damper lever spring block doz.
14	Damper lever mount (treble) doz.
15	Damper block mount (bass) doz.
16	Damper lever snap flange
17	Jack let off button screw doz.
18	Jack let off button doz.
19	Key front (white)
20	Key front (sharp)
21	Key tail (white)
22	Key tail (black)
23	Key capstan assembly
24	Key bottom insert (white/sharp)
25	Kep spring/dowel assembly
26	Key snap flange
27	Key guide pin — doz.
28	Key guide pin sleeve doz.
29	Pedals (set of 3)
30	Pedal rod
31	Muffler — (set of 3)

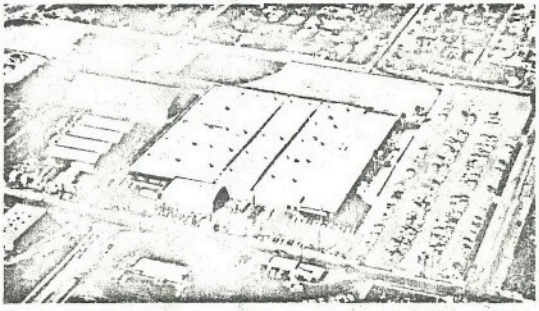
NUMBER	DESCRIPTION
32	Muffler control wire
33	Hammer (complete set)
34	Hammer (treble section)
35	Tuning Pin (set)
36	Bass string (complete set)
37	Damper — treble (block mounted)
38	Damper — single bass (block mounted)
39	Damper — double bass (block mounted)
40	Damper — treble (set)
41	Damper — bass (set)
42	Capstan regulating tool
43	Repair and regulating kit:
	a. service manual
	b. capstan regulating tool
	c. dampers (1 doz. mixed)
	d. hammer shanks (1 doz.)
	e. butt springs (1 doz.)
	f. damper springs (1 doz.)
	g. bridle straps (100)
44	Lid hinge (set of 3)
45	Fall board hinge
46	Casters (set)
47	Fallboard pull knobs (set)
48	Music rack (finished)
49	Legs (set) (finished)
50	Music rack mounting hardware (set)
51	Piano bench (finished)
52	Piano bench legs (finished)
53	Service manual
54	Action model

NOTE: Refer to Piano Action Nomenclature, Fig. 4, Pages 4 and 5.

Lifetime Guarantee

The aluminum frame, the soundboard and the laminated pinblock are bonded together with epoxy adhesives with such permanence that it is possible to **guarantee the soundboard against warping or cracking for the life of the piano.**

Thomas Organ Co.
Piano Division



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