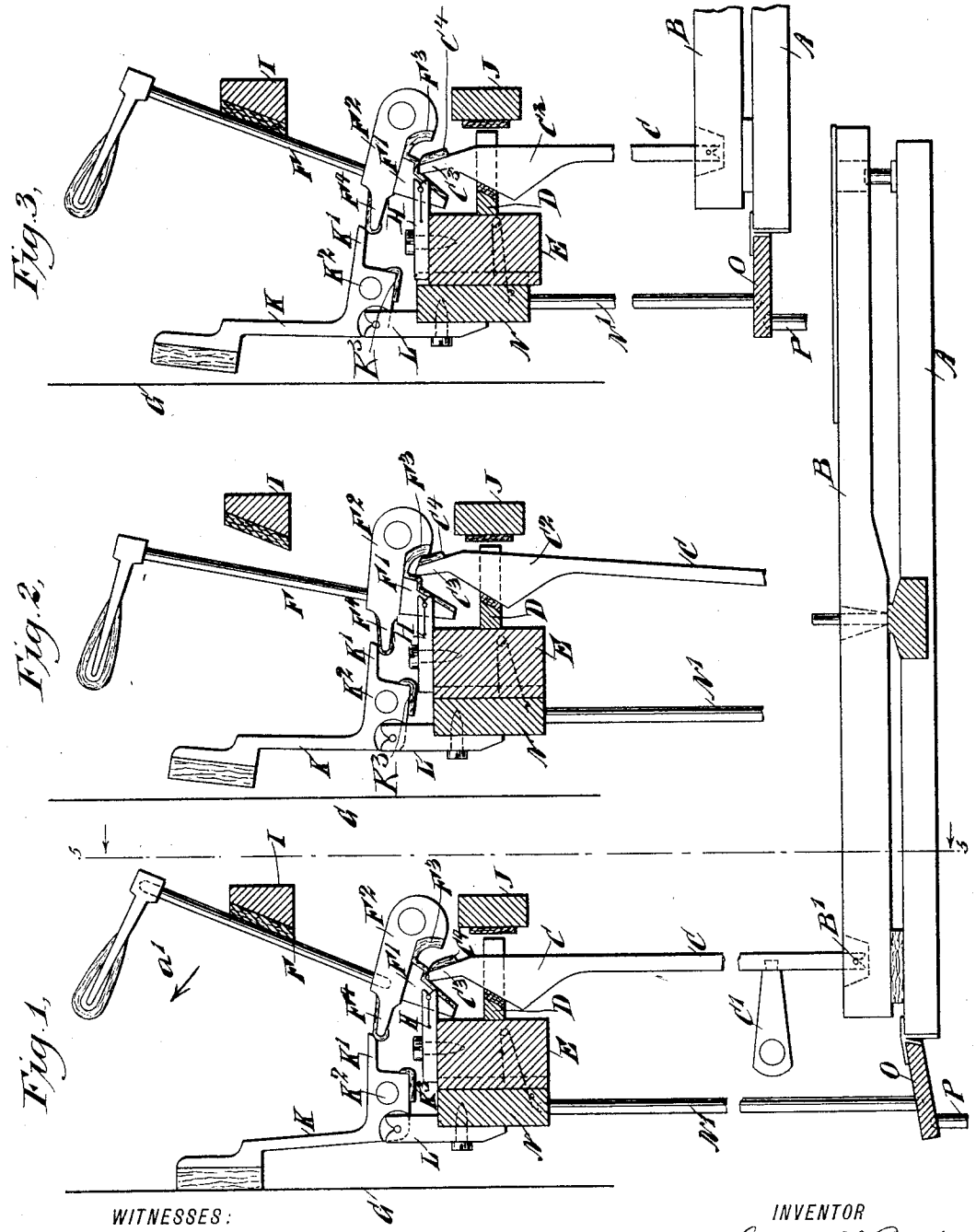
(No Model.) 2 Sheets—Sheet 1.

# J. H. BLOCK.

## PIANO.

No. 589,331. Patented Aug. 31, 1897.




WITNESSES:

Edward Thorpe.

Fred. J. Hoskins

INVENTOR

Julius H. Block

BY

ATTORNEYS.

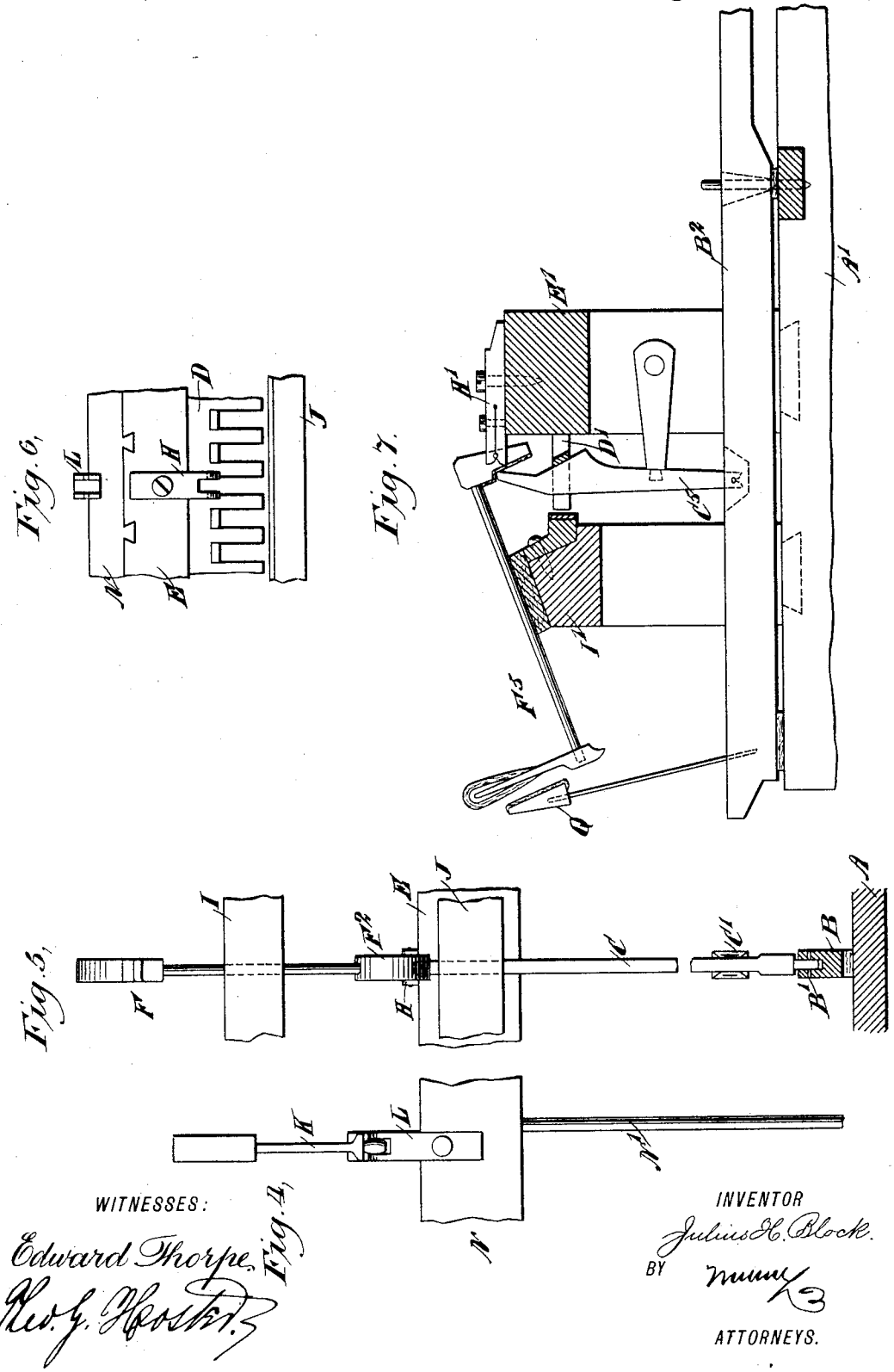
THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

# J. H. BLOCK.

## PIANO.

No. 589,331. Patented Aug. 31, 1897.




WITNESSES:

Edward Thorpe.

Rud. J. Hoster.

INVENTOR

Julius H. Block.

BY

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

JULIUS H. BLOCK, OF MOSCOW, RUSSIA.

## PIANO.

SPECIFICATION forming part of Letters Patent No. 589,331, dated August 31, 1897.

Application filed June 8, 1896. Serial No. 594,675. (No model.)

*To all whom it may concern:*

Be it known that I, JULIUS H. BLOCK, of Moscow, Russia, have invented certain new and useful Improvements in Pianos, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in upright and square pianos whereby the power and volume of tone are greatly increased, lightness of touch is obtained, and the undesirable springs in the action as now employed are entirely dispensed with.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement arranged for upright pianos and with the key and hammer at rest. Fig. 2 is a like view of the same with parts in a different position. Fig. 3 is a like view of the same with the damper thrown off the strings by the pedal. Fig. 4 is a rear face view of the damper. Fig. 5 is a sectional front elevation of the improvement on the line 5 5 of Fig. 1. Fig. 6 is a plan view of the hammer-rail and adjacent parts, and Fig. 7 is a sectional side elevation of the improvement as arranged for grand pianos.

On the key-frame A of an upright piano are mounted in the usual manner the keys B, each provided between its pivot and extreme rear end and on the top with a recess through which passes transversely a pivot-pin B′, into which fits the lower end of a vertically-disposed jack C, having a horizontally-extending weight C′ and provided at its upper end with a wedge-shaped head $C^2$, guided in a forked guideway D, secured to the front of the hammer-rail E, as plainly shown in the drawings.

The extreme upper end of the jack C is provided with an angular projection $C^3$, normally engaging a felted shoulder F′ on the butt-end of the hammer F, adapted to sound the strings G, said hammer being fulcrumed on a bracket H, secured to the top of the hammer-rail E. The hammer F is provided near its lower end with a forwardly-extending weighted arm $F^2$, adapted to normally hold the hammer F away from the strings and in engagement with a felted rail I, as indicated in Figs. 1 and 3.

The free end of the weighted arm $F^2$ is provided at its under side with a felted rest or shoulder $F^3$, adapted to be engaged by the felted front face $C^4$ of the projection $C^3$. (See Fig. 2.) The forwardly-swinging motion of the jack C is limited by a felted rest J, located below the rest I and which, like the rest I, is secured to the sides of the piano-frame.

The hammer F has its arm $F^2$ extended inwardly and formed with a felted projection $F^4$, adapted to engage the under side of an arm K′, projecting from the butt-end of a damper K, normally in contact with the corresponding string G. The arm K′ is weighted, as at $K^2$, so that when the hammer F is thrown inward toward the string G then the projection $F^4$ on leaving the under side of the arm K′ permits the weight $K^2$ to swing the damper K out of engagement with the string G, as illustrated in Fig. 2. Part of the under side of the arm K′ is felted, as at $K^3$, to permit the arm to rest easily on the bracket H at the time the damper K is off the strings.

The damper K is fulcrumed on a bracket L, secured to the damper-rail N, fitted to slide vertically on the rear face of the hammer-rail E, and said damper-rail N is provided with a downwardly-extending rod N′, set in a recess in a plate O, fulcrumed to the rear end of the key-frame A, as is plainly shown in Figs. 1 and 3. This plate O is connected by a downwardly-extending rod P with one of the pedals, so that when the pedal is pressed an upward-swinging motion is given to the plate O, and consequently the damper-rail N is moved vertically on the hammer-rail E to the position shown in Fig. 3. In shifting the damper-rail N in this manner the arm K′ of the damper K is raised sufficiently to permit the weight $K^2$ of said arm to impart a forward-swinging motion to the damper and cause the latter to disengage the string G, so that all the dampers are thrown off by the operator actuating the pedal.

When the several parts are at rest, as illustrated in Fig. 1, and the key B is pressed by the operator executing the music, the rear upwardly-moving end of the key causes a lifting of the jack C, so that the projection $C^3$ of the jack by being in contact with the shoulder F′ imparts a swinging motion to the hammer in the direction of the arrow $a'$, so that the hammer sounds the string G. As the jack C moves upward its wedge-shaped head $C^2$ by being in engagement with the felted part of the guide D causes a forward swinging of the jack, whereby the projection $C^3$ is finally moved off the shoulder F′, and consequently the contact of the said projection with the butt-end of the hammer ceases at the time the hammer-felt is within a short distance of the string G, when the propelling force of the jack ceases and the last part of the stroke of the hammer is by its inertia. When the projection $C^3$ slides off the felted shoulder F′, it moves in engagement with the felted shoulder $F^3$. As soon as the key B is released and the rear end swings downward then the jack C returns to its normal position (shown in Fig. 1) by the action of the weighted arm C′ on the jack.

When the hammer F commences to swing toward the string, as above described, the projection $F^4$ in releasing the arm K′ permits the damper K to swing out of engagement with the string by the action of the weight $K^2$ on the said arm, and when the hammer F returns from the string, as above explained, then the projection $F^4$ presses on the arm K′ in a downward direction to again move the damper K in engagement with the string. Thus it will be seen that by the arrangement described the jack, the hammer, and the damper return to their normal positions by their own gravity or by the action of other parts engaging them, and consequently no springs of any kind are necessary. The entire arrangement is so balanced that the slightest touch of the key will actuate the hammer and damper, so that great lightness of touch is readily acquired by the performer.

As previously mentioned, all the dampers K may be simultaneously thrown off the strings by the operator pressing one of the pedals. In this case the arm K′ does not move out of engagement with the projection $F^4$, as shown in Fig. 3.

For grand pianos the arrangement is similar to the one above described in reference to upright pianos and as illustrated in Fig. 7. In this case, however, the rests for the hammer and jack are combined in a single felted rail I′, supported from the keyboard-frame A′. The keys $B^2$ carry the weighted jacks $C^5$, guided in guides D′ and engaging shoulders on the butt-ends of the hammers $F^5$, fulcrumed on brackets H′, secured to the hammer-rail E′.

On the rear end of each key $B^2$ is secured a felted stop Q, adapted to form a rest for the hammer-felt at the time the key swings backward to its normal position. Otherwise the action is the same as above described in reference to upright pianos.

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

1. In a piano-action, a pivoted damper provided with a forwardly-extending arm or projection, a hammer provided with a projection extending rearwardly under the said arm of the damper, and having a sliding engagement therewith, and means for throwing the hammer against the string, substantially as shown.

2. A piano-action, comprising a key, a jack pivotally connected with said key and having a weighted arm, a wedge-shaped head and an inclined projection, and a weighted hammer having on its butt-end a shoulder adapted to be engaged by said projection, substantially as shown and described.

3. A piano-action, comprising a key, a jack pivotally connected with said key and having a weighted arm, a wedge-shaped head and an inclined projection, a weighted hammer having on its butt-end a shoulder adapted to be engaged by said projection, and a forked guide for the head of said jack, to impart a swinging motion to the jack on its upward movement, to disengage the projection from said shoulder, substantially as shown and described.

4. A piano-action, provided with a gravity-damper, and a gravity-arm normally holding said damper on the strings, the hammer on its forward stroke releasing said damper and permitting the latter to move by its own weight out of engagement with the strings, substantially as shown and described.

5. A piano-action, provided with hammers, a damper-rail, and dampers supported on said rail and normally pressed in contact with the strings by the hammers while the latter are in an inactive position, said dampers on the rearward stroke of the hammers moving out of engagement with the strings by their own gravity, substantially as shown and described.

6. A piano-action, provided with a movable damper-rail, and gravity-dampers pivoted on said rail and normally held on the strings by the hammers while at rest, said dampers moving out of engagement with the strings by their own gravity on the lifting of said damper-rail, substantially as shown and described.

7. A piano-action, provided with a hammer having a weighted butt-end, and a pivoted damper having a weighted arm engaged by a projection on the butt-end of said hammer, to hold said damper on the strings while the hammer is at rest or inactive, substantially as shown and described.

8. A piano-action, provided with a hammer having a weighted butt-end, a pivoted damper engaged at its weighted butt-end by a projection on the butt-end of the hammer, to hold said damper on the strings while the hammer

is at rest or inactive, a hammer-rail mounted to slide and carrying the dampers, and means, substantially as described, for imparting a sliding motion to said damper-rail from one of the pedals, substantially as shown and described.

9. In a piano-action, a pivoted damper arranged to move out of contact with the string when released, and provided with a forwardly-extending arm or projection, a hammer provided with a projection extending rearwardly under said damper-arm to press said arm upward while the hammer is at rest, and thereby hold the damper against the string, the projection of the hammer having a sliding engagement with the damper-arm, and means for actuating the hammer to release the damper, substantially as described.

10. A piano-action, provided with a damper-rail mounted to slide longitudinally of the strings and connected to a pedal, dampers pivoted to said rail, hammers controlling said dampers individually and directly and means for actuating the hammers, substantially as described.

11. A piano-action, comprising a damper-rail mounted to slide longitudinally of the strings and connected to a pedal, dampers pivoted to said rail and provided with projections, hammers provided with projections engaging those of the dampers and means for actuating the hammers, substantially as described.

JULIUS H. BLOCK.

Witnesses:
WILLIAM HORSCHJED,
AHEHMANN.