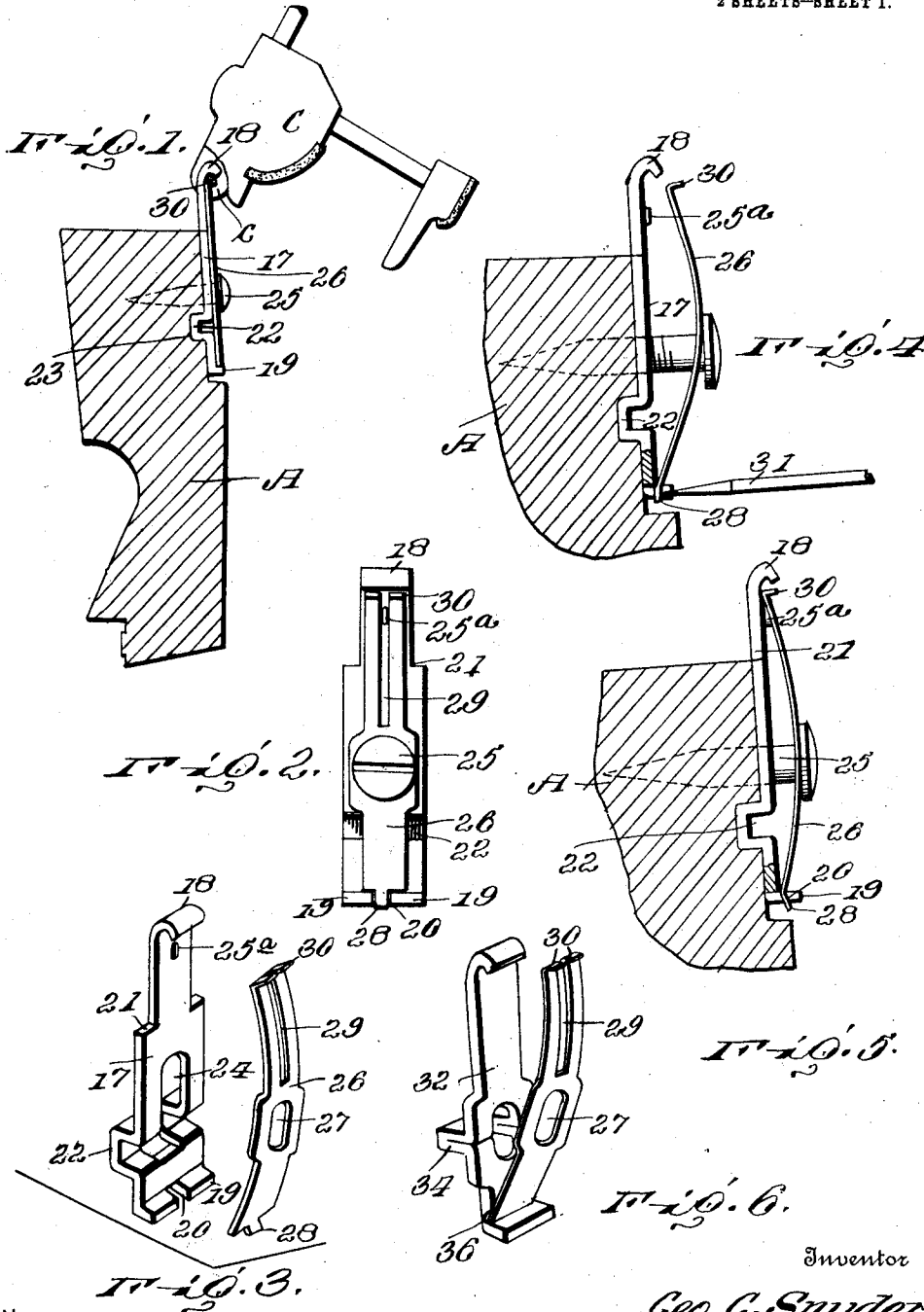


G. C. SNYDER.
 LOCK FLANGE FOR PIANO ACTIONS.
 APPLICATION FILED SEPT. 9, 1910.

1,011,510.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.



Witnesses
W. H. Woodson
J. M. Felling

Inventor
Geo. C. Snyder

By *W. H. Lacy*, Attorneys.

G. C. SNYDER.
 LOCK FLANGE FOR PIANO ACTIONS.
 APPLICATION FILED SEPT. 9, 1910.

1,011,510.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 2.

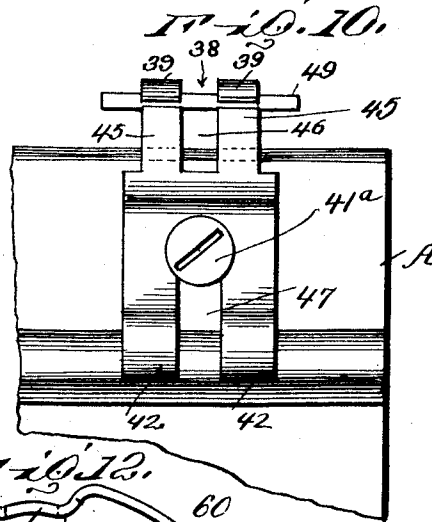
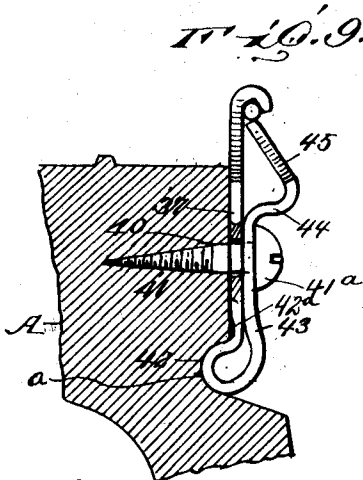
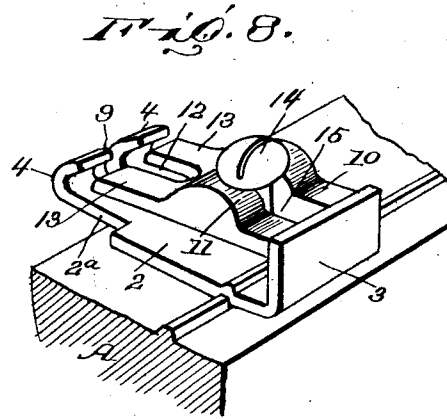
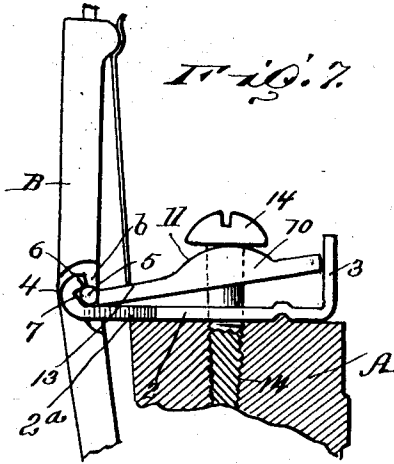


Fig. 13.

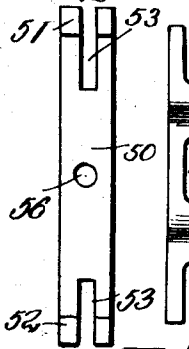
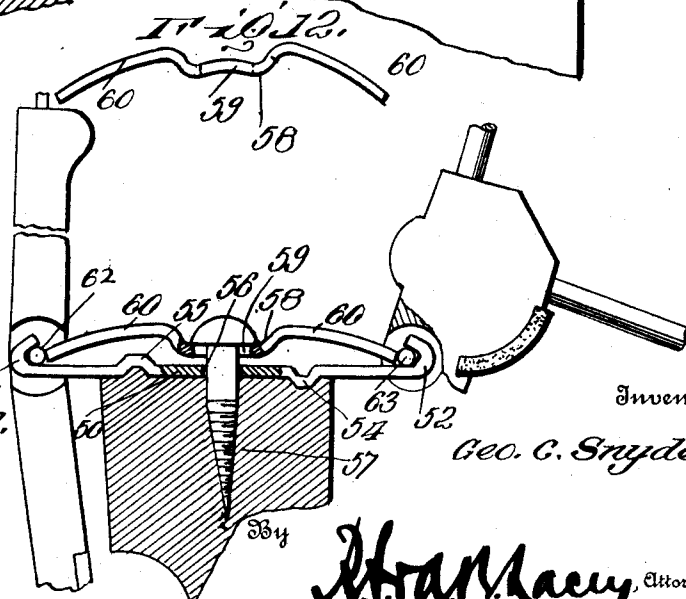


Fig. 11.

Witnesses
 W. H. Woodson.
 Juana M. Fallin.



Inventor

Geo. C. Snyder

H. A. Macy, Attorney.

UNITED STATES PATENT OFFICE.

GEORGE C. SNYDER, OF WASHINGTON, DISTRICT OF COLUMBIA.

LOCK-FLANGE FOR PIANO-ACTIONS.

1,011,510.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed September 9, 1910. Serial No. 581,323.

To all whom it may concern:

Be it known that I, GEORGE C. SNYDER, citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Lock-Flanges for Piano-Actions, of which the following is a specification.

My invention relates to flanges for musical instruments such as pianos, organs and the like, and is applicable to actions of every sort, grand, square or upright, and the main object of the invention is to provide a flange of such form that it may be made of metal, thus doing away with warping or shrinkage and constant adjustment, and may be made at an extremely low cost and of such simple construction that it may be easily applied and removed.

A further object is to provide a flange of the character above described from which the pivot pin supporting the action element may be removed without forcing the pin out endwise and without any strain being placed upon the pin which would tend to bend or otherwise deform the same.

Another object is to so construct the flange that the pivot pin may be locked rigidly in place and that the degree of locking pressure upon the pivot pin may be adjusted.

Another object is to provide a flange which as a whole may be easily adjusted upon the rail and in which the pivot pin may be removed from its engagement with the flange without removing the flange from the action rail or other part to which it is attached.

Still another object is to provide a flange which while securing the advantages above named also takes up any shrinkage or warping of the rail and which is resiliently engaged with the screw holding the flange in place, thus preventing any rattling of the flange and thus eliminating the necessity of constantly readjusting the flange.

Several embodiments of my invention are shown in the accompanying drawings.

In these drawings: Figure 1 is a side elevation of one form of my improved flange as applied to an action rail, the action rail being shown in section. Fig. 2 is a front elevation enlarged of the flange the rail not being shown. Fig. 3 is a perspective view of the flange shown in Fig. 1 detached, the locking member being slightly removed from the base member in order to show the

construction of parts. Fig. 4 is a side elevation partly in section of the flange shown in Figs. 1 and 2 and illustrating the manner in which the flange is raised to permit the pivot pin of the action element to be removed. Fig. 5 is a like view to Fig. 4 but showing the clamping or locking member in place ready to be clamped against the pivot pin. Fig. 6 is a detail perspective view of a slightly modified form of flange showing the locking member in the position it assumes when raised in order to permit the removal of the pivot pin. Fig. 7 is a side elevation of another form of flange, the parts being in their locking position, the action rail being in section. Fig. 8 is a perspective view of the form shown in Fig. 7. Fig. 9 is a side elevation of still another modified form wherein the parts are made in one piece, the action rail being in section. Fig. 10 is a front elevation of Fig. 9. Fig. 11 is a side elevation partly sectional of a double flange for supporting both a hammer and damper, the action rail being in section and a part of the flange being broken away. Fig. 12 is a side elevation of the locking member detached from the base member. Fig. 13 is a face view of the locking member and the base member, the locking member being removed from the base member.

The simplest form of my invention is shown in Figs. 7 and 8. In this embodiment the flange consists of a base member 2 formed at one end with an abutment 3. The opposite end of the base plate is bent over as at 4 to form a permanently open clamping seat for the pivot pin 5. Preferably the interior face of the hooked portion 5 is not curved but has two angular faces 6, 7, the face at 6 extending inward and toward the adjacent end of the base member, and the face at 7 extending at an angle to the face of the base 2. A two-point seat is thus provided for the pivot pin. The middle of the base member is formed for the passage of a screw 14. The base member is slotted or bifurcated longitudinally as at 9 from its hooked end to any desired point, preferably a distance about equal to the projection of the base plate beyond the rail A, thus providing oppositely disposed hooked arms, engaging the pivot pin 5 on each side of the part *b* of the action element. This element is shown as a damper lever, but this is purely for illustration.

The locking members 10 in the form shown in Fig. 7 consists a rigid plate which is thickened at its middle portion in order to give the requisite rigidity and which has a bowed face 11. The locking plate has the same width as the base plate 2 and a length somewhat greater than the distance between the face of the inside abutment 3 and the face of the pivot pin. The portion of the locking plate between the thickened portion and the pin-engaging extension is slotted as at 12 to form parallel spaced arms 13, the slot 12 being equal in width to the slot 9. Passing through the thickened portion of the plate is the screw 14. This screw passes through the opening in the base plate and into the rail A, the head of the screw contacting with the rounded face 11. To accommodate the screw the locking plate is formed with a slot 15 which extends to the adjacent extremity of the plate 10.

In use the base plate is attached to the rail, by means of the screw, with the hooked bifurcated portion of the plate extending beyond the face of the action rail. The pivot pin of the action element is then inserted within the open seat formed by the hooked bifurcated portion of the base plate, and the locking plate or member is then placed with its bifurcated end in engagement with the pivot pin and in the position shown in Fig. 7, the other end of the locking plate having sliding engagement with the abutment 3, the screw 14 of course passing through the locking plate with its head bearing against the rounded portion 11. Now by turning up the screw the abutment-engaging end of the locking plate will be moved inward and will thus gradually wedge into a locking position, forcing the pivot pin up into its bearing. Eventually a point is reached where the pivot pin is fully clamped.

Preferably the portion of the base plate which projects beyond the action rail is narrowed as at 2^a and the locking plate is correspondingly narrowed.

In the form of my invention shown in Figs. 1 to 5, the base plate 17 has approximately the same form as previously described but is a solid piece from one end to the other. One end of the base plate is formed with a hook portion 18 while the other end is formed with an angularly extending abutment 19, this abutment being notched at its middle as at 20 for a purpose to be later stated. The base plate is shouldered as at 21 so that the upper portion of the flange, or that portion of the flange which extends beyond the action rail, is reduced in width so as to fit between the ears c of the action element C.

The base plate 17 is formed with an angular corrugation 22 intermediate its ends which is adapted to engage snugly in a lon-

gitudinal groove 23 formed in the action rail A. It is to be noted that this groove is relatively wide and not a mere narrow saw kerf. This wide groove is much more easily made and at a less expense than if the groove had the form of a longitudinally extending kerf as made by a saw, and what is much more important, the groove may be absolutely straight from end to end without any variation in its direction, whereas a saw kerf constantly varies in its direction due to the flexibility of the saw. As a consequence the flanges which are adapted to engage such a saw kerf vary in their relation to each other. The flanges are never exactly parallel and hence the parts of the action will never be supported in absolutely proper position. Furthermore, the shrinkage of the wood of the rail tends to loosen the engagement with the flange, which is not the case with the flange shown in these figures, by reason of the fact that the corrugated portion 22 of the flange may be forced firmly into engagement with the groove 23 and that once in engagement with the groove the flange will be held snugly in place.

The base plate 17 is provided with an opening 24 for the passage of the screw 25. This opening as shown in Fig. 3 is extended beyond the corrugated portion 22, thus giving a certain elasticity to the corrugation 22 and permitting it to be compressed within the groove 23. The resiliency of the metal will cause the parts to slightly spring outward and thus the flange will be further snugly engaged with the groove 23. As before stated, the abutment 19 is formed with a medially placed notch 20 which extends the whole depth of the abutment, and in line with this notch 20 but located at the other end of the base plate, there is an outwardly extending pin, tooth or other projection 25^a. This projection need be very slight and may be made in any suitable or desired manner. It is shown as having the form of a very small stud but I do not wish to be limited to this form. The locking member 26 of this flange is made of relatively thin spring metal such as phosphor bronze or other resilient material. This locking member is bowed outward at its middle and is of such length that when the locking member is detached from its engagement with the base plate a chord subtending the arc described by the locking member will be less than the distance between the abutment 19 and the pivot pin. When, however, the locking member is flattened it will have a length slightly greater than the distance between the abutment and the pivot pin, as shown in Fig. 1. The middle portion of the locking member is enlarged and formed with an elongated opening 27 for the passage of the screw 25. One extremity of the locking member is provided with the pro-

jecting centrally disposed tooth 28 which is adapted to be received in the notch 20, while the other end of the locking member beyond the opening 27 is bifurcated by a longitudinally extending slit 29 having a width equal to the width of the stud 25^a, as shown in Fig. 2. The arms of the locking member formed by the slot 29 are outwardly bent as at 30, these outwardly bent ends being approximately at right angles to the plane of the locking member.

It will be seen that when the locking member is in place and the screw 25 turned up that the locking member will be flattened and that as it is flattened the free end of the locking member will move against the face of the base plate and against the pivot pin, and that as the screw 25 is turned in the clamp will be forced with greater and greater strength against the pivot pin and that it will act to bind the pivot pin rigidly in place within the bearing. Furthermore, it is to be noted that the locking plate cannot get out of its position, one end of the plate being held by the tooth 28 extending into the notch 20 while the other bifurcated portion of the plate or member is held from any lateral movement by reason of its engagement with the stud or projection 25^a. Thus a rotation of the screw does not tend to rotate the locking member, the locking member being guided in its flattened movement by the engagement of the arms with the locking member on each side of the stud 25^a.

It is to be noted that the tooth 28 is bent outward at an angle to the bowed portion of the locking plate or member, as illustrated in Fig. 5. The object of this angular bending of the tooth 28 is to provide a very easy means whereby the pivot pin engaging end of the locking member may be raised from the base plate so as to permit the easy removal or insertion of the pivot pin. It is only necessary to press inward on the angularly turned end of the locking member whereupon the other end will be outwardly forced, as shown in Fig. 4. This inward pressure upon the tooth 28 may be easily accomplished by using a screw driver, designated by the numeral 31. In the actual assembling of the parts of a piano action this capability of quickly and easily raising the locking member from the base plate is of considerable importance and saves a relatively large mount in engaging the flanges with the parts pivoted thereon.

In Fig. 6 I show a modified form of flange which is practically the same as that shown in Figs. 1 to 5. The only difference in this form of flange is that the material of the base plate 32 is folded at its middle as at 34 to form the corrugated portion of the base plate, the two parts of the fold being forced closely together so that a transversely extending flange is formed instead of the

relatively wide corrugation 22. Furthermore, in order to provide another means whereby the locking member may be lifted, that portion of the base plate adjacent to the abutment 35 is grooved as at 36. The locking member is precisely the same as that previously described except that it is not provided with the tooth 28. When it is desired to raise the pivot-pin-engaging end of the locking member from the base plate, an implement is pressed against the extremity of the locking member. The locking member thus rocks upon the margin of the groove 36 as upon a fulcrum, and the locking plate or member is therefore raised.

It is to be noted that in both the forms shown in Figs. 1 to 5 and that shown in Fig. 6, a fulcrum is provided upon which the locking member rocks. In the form shown in Figs. 1 to 5 the fulcrum member is the corner defining the inner end of the slot 20, while in that shown in Fig. 6 the fulcrum is the margin or corner defining the groove 36.

When it is desired to remove the action member, it is not necessary to remove the flange from the action rail, nor is it necessary to remove the locking member. The screw 25 is unloosened and as the screw is unloosened the resiliency of the locking member causes it to reassume the bowed form. After the screw has been sufficiently unscrewed a tool is placed against the abutment engaging extremity of the locking member and the locking member forced outward in the position shown in Figs. 4 and 6, whereupon the action member and the pivot pin may be easily removed or replaced. The resiliency of the locking member acts to hold the flange in place while the screw is being loosened and also acts to constantly force the flange inward and thus prevents rattling. It will thus be seen that the resilient locking member acts also as a spring washer.

In Figs. 9 and 10, 37 designates the base plate which is hooked at its upper end and slotted as at 38 to form the oppositely disposed parallel spaced arms formed with hook-shaped seats 39. The base plate is formed with an opening 40 for the passage of a screw 41 and at the end opposite to the hooked portion the base plate is bent to form a spring 42. Preferably this spring portion projects from the rail-contacting face of the base plate 37 and is accommodated by forming the channel *a* in the rail A. The spring portion 42 is continued upward along the face of the base plate as at 43 and is then outwardly deflected as at 44 and then inwardly extended toward the hooked end of the base plate to form the portion 45. This portion 45 is bifurcated as at 46 to form the oppositely disposed parallel spaced locking arms 45. The lock-

ing extremity of the locking plate bears against the face of the base plate when the screw 41 is loosened, but when the screw is tightened the bowed spring formed by the portions 44, 45 will be flattened and the extremities of the portion 45 will move upward and into engagement with the pivot pin in precisely the same manner as previously described for the locking plate 26. The base plate and locking plate are bifurcated as at 47 for the accommodation of the screw 41 which is provided with a head 41^a. It is to be noted that the base plate of the base plate with the spring portion 42 does not contact with the face of the action rail, but that a small space is left as at 42^a.

Figs. 11, 12, 13 and 14 show still another form of my device which is a double lock flange for making two pivotal connections and at the same time holding the flange in place against the rail with but one screw. This flange is particularly adapted for use upon the upper face of an action rail to afford a bearing for both the damper lever pivot and the hammer-butt pivot. In detail, like the other flanges it comprises a base plate 50 which at one end is over-turned to form the hooked portion 51, forming a two-point open seat as previously described, and at the other end is similarly bent over to form a hooked portion 52, affording a like two-point open seat. The opposite ends of the base plate are bifurcated by a slot 53 so as to form two parallel spaced arms at opposite ends of the base plate. In order to hold the base plate in engagement with the action rail so that it shall not turn thereon, the middle of the base plate may be provided either with an inwardly extending crimp 54 or corrugation, or with an outwardly extending corrugation 55, the action rail being formed with a groove for the accommodation of the crimp 50 and with a rib to enter the corrugation 55. The middle of the base plate is formed with an opening 56 through which passes the screw 57, the opening having approximately the same diameter as the screw. The locking plate 58 is substantially bow-shaped from end to end and is formed of resilient material. The middle of the plate 58 is formed with a passage 59 for the screw 57, this opening or passage 59 being elongated. From the middle portion of the locking plate the material of the plate is outwardly bowed toward the ends thereof as at 60 and is bifurcated as at 61. It will be seen that in all forms of my invention the same principle is used, that of providing a locking member, plate or jaw which is longitudinally movable into position to close a permanently open seat in which the pivot pin is supported. It

is to be particularly noted that the locking plate clamps directly against the pivot pin, and that the seat formed in the base plate is not itself closed down upon the pivot pin but is closed by the locking plate. It is further to be noted that the movement of the pivot pin engaging end of the locking plate is longitudinal until it is engaged with or disengaged from the pivot pin.

It will be observed that in all forms of my invention, except that form in which a rigid locking plate is used, the resilient locking plate forms a means for keeping the flange tightly pressed against the action rail, and thus preventing any loosening of the flange due to shrinkage or warping of the wood of the action rail, thus preventing rattling and eliminating the necessity of tightening the screws for holding the flange to the rail from time to time.

Having thus described the invention what is claimed as new is:—

1. A flange for piano actions having at one end an open seat for a pivot pin, and a coacting locking member, one end of which is free to move into a position across the opening of the seat to close the same, said flange and locking member having registering perforations extending entirely through both the flange and locking member said registering perforations providing means for the insertion of a single fastening means to hold the flange to the rail and to force the locking member against the flange.

2. A flange for musical instruments having an abutment at one end and a hooked portion at the other end, said hooked portion forming a seat for a pivot pin, a bowed resilient locking member supported upon the face of the flange, one end thereof engaging with the abutment and the other end being free to take a position across the opening of the seat and in engagement with the pivot pin supported therein, the flange adjacent to the abutment being formed with a fulcrum, the abutment-engaging end of the bowed locking member extending beyond said fulcrum, said fulcrum permitting the locking member to be outwardly rocked to permit the insertion of the pivot pin in place.

3. The combination with a rail of a piano action, of a flange having at one end an open seat for a pivot pin, a co-acting locking member resting against the face of the flange and extending parallel thereto, one end of said locking member being movable into a position across the opening of the seat to close the same, and a screw for the flange passing through both the locking member and the flange, said screw having a head bearing against the face of the locking member.

4. The combination with a rail of a piano action, of a flange having at one end an open seat for a pivot pin, a resilient locking mem-

ber extending parallel to the flange, one end of which is held from longitudinal movement relative to the flange and the other end of which is free to move along the face of the flange into position to close the opening of the seat, and a screw passing entirely through both the locking member and flange, holding the locking member in its closed position and the flange to the action rail, the head of the screw bearing against the locking member.

5. The combination with a rail of a piano action, of a flange having at one end a permanently open pivot seat, a co-acting resilient locking member having a freely movable locking extremity bent toward the face of the flange, the other extremity of said locking member being held from any longitudinal movement relative to the flange, the free extremity of the locking member bearing against the face of the flange and being longitudinally movable therealong, and a single attaching means passing entirely through the locking member and the flange and into said rail and holding the locking member with its free end in engagement with the seat in said flange.

6. The combination with a rail of a piano action, of a flange, one end of which is bent over upon itself to form an open seat for a pivot pin, a resilient longitudinally bowed locking member, the opposite ends of said member contacting with the face of the flange, one extremity of the locking member being held from longitudinal movement, the other extremity closing the open seat in the flange and clamping against a pivot pin retained therein, and a screw passing entirely through the locking member, through the flange and into said rail, said screw when tightened flattening the bowed locking mem-

ber and causing the free end thereof to move into a pivot-pin-engaging position.

7. The combination with a rail of a piano action, of a flange therefor, including a base member having an abutment at one end and a seat for a pivot pin at the other end, a bowed resilient locking member engaging at one end with said abutment and at the other end movable longitudinally along the face of the base member to clamp a pivot pin in place in said seat, means on one member projecting into a recess on the other member and holding the locking member parallel to the base plate, and a single means passing through both the locking member and the base plate of the flange and engaging said rail for flattening the bowed locking member against the face of the base plate and holding the base plate in position on the rail.

8. A piano flange, comprising a metallic strip formed at one end with a seat for a pivot pin, said strip intermediate its ends being formed with a transverse resilient fold forming a resilient rail-engaging corrugation projecting from the face of the flange and having approximately parallel side faces.

9. In a piano action, the combination with an action rail having a longitudinally extending slot upon its face, of a flange therefor including a metallic strip formed intermediate its ends with a resilient fold inserted in said slot, said slot having approximately parallel faces.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE C. SNYDER. [L. s.]

Witnesses:

J. R. A. LANG,
A. O. W. SETLEY.