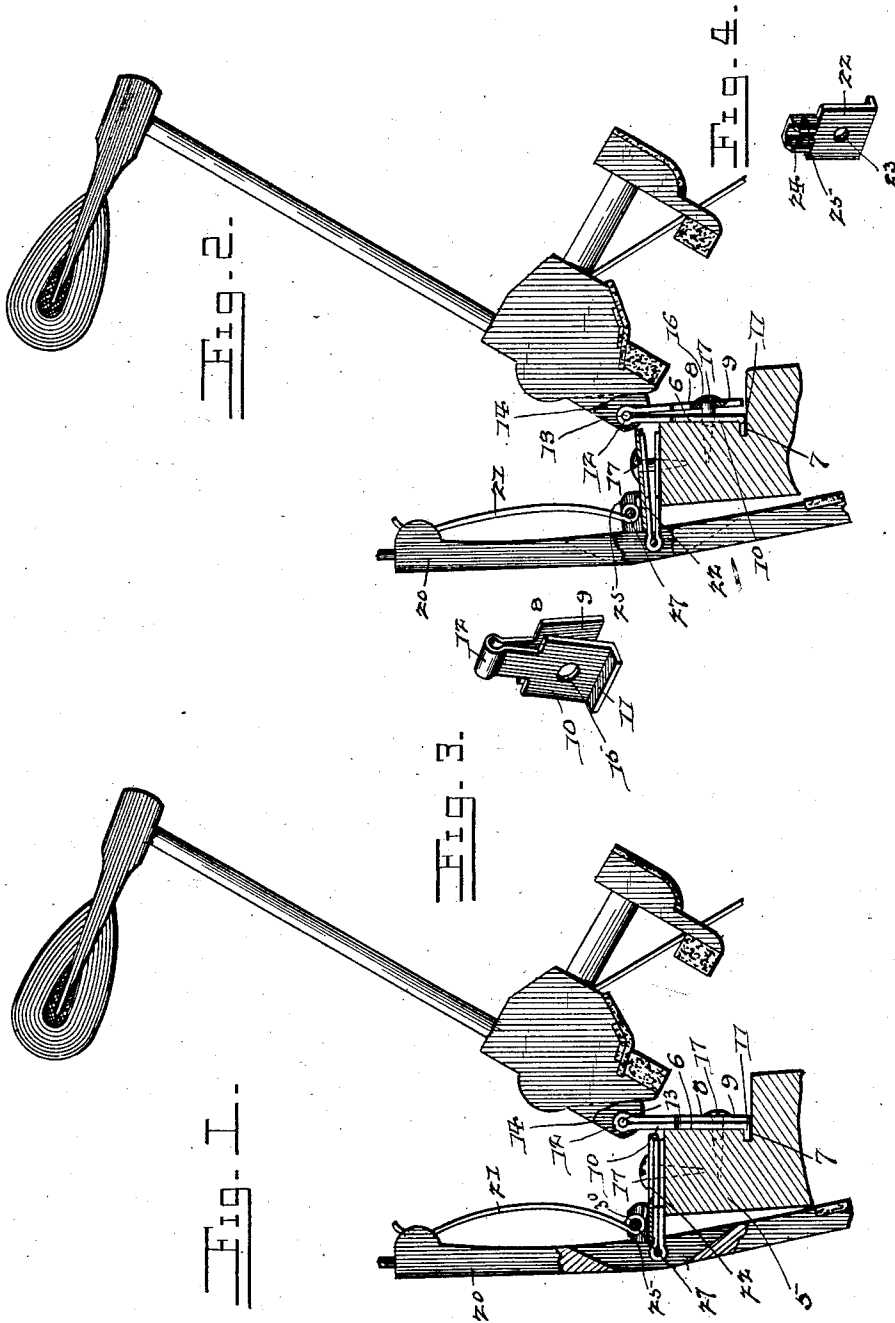


F. C. BILLINGS.

FLANGE.

(Application filed July 25, 1900. Renewed Oct. 15, 1902.)

(No Model.)



Witnesses
J. E. Alden.
Geor. Chandler

By *F. C. Billings* Inventor
C. A. Knowlton
 Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK C. BILLINGS, OF MACON, MISSOURI.

FLANGE.

SPECIFICATION forming part of Letters Patent No. 713,944, dated November 18, 1902.

Application filed July 25, 1900. Renewed October 15, 1902. Serial No. 127,441. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK C. BILLINGS, a citizen of the United States, residing at Macon, in the county of Macon and State of Missouri, have invented a new and useful Flange, of which the following is a specification.

This invention relates to piano-actions in general, and more particularly to the flanges thereof, the object of the invention being to provide a flange which may be readily applied to and detached from the hammer-rail and which may be easily and effectively adjusted to secure the proper friction between it and the pivot-pin of the hammer-butt.

A further object of the invention is to provide a construction wherein shrinkage of the hammer-rail will be compensated for and the construction will be simple and cheap. In a device of this nature it is essential that the bearing for the pivot-pin shall be adjustable and also that in adjusting the bearing equal pressure shall be exerted throughout the bearing. As this general class of flanges has been heretofore made when adjustable they have consisted of a split bearing, each element of the bearing being arc-shaped; but when these two elements have been brought together the arcs have not changed in radii, and where they may conform to the radius of the pivot-pin when in one position—that is, may be concentric therewith—they will not be so in another position and instead of exerting an even pressure will exert an uneven pressure. With the present construction the bearing is in the form of a split ring, and as the ring is contracted upon a pivot-pin it maintains a circular form, with a gradually-decreasing radius, until it is in actual contact with the pin. Thus the wear upon the pin and upon the bearing is even, and accurate adjustment may at all times be had.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation of a hammer having its lower portion or butt partly broken away to show the location of the pivot-pin and the relation of the flange thereto, the hammer-rail being shown in section with the flange attached thereto. Fig. 2 is a view similar to Fig. 1 and showing the same parts, the flange-screw being slightly retracted to re-

lease the pivot-pin. Fig. 3 is a detail perspective view showing the flange. Fig. 4 is a perspective view of the plate used in connection with the flange when employed with the damper.

Referring now to the drawings, the hammer-rail is shown at 5 and is of the usual form and construction, with the exception that at the bottom of its rear vertical face 6 there is formed a longitudinally-extending groove 7 to receive the feet of the several flanges.

Each flange consists of a plate of spring metal 8, the middle portion of which is narrowed, while at the ends are broadened portions 9 and 10, which are preferably rectangular, as shown, one of these rectangular portions being longer than the other and having its excess of length turned laterally at right angles to form a foot 11, which is adapted to engage in the slot or groove 7.

The plate of which the flange is formed is bent upon itself into V shape or with its end portions diverging, and at the bight or bend the plate is formed cylindrical to provide a seat for the pivot-pin 13 of the hammer, said pin being engaged with perforations in the flanges 14 at the bottom of the hammer-butt and which flanges lie at opposite sides of the bearing of the flange.

In the rectangular end portions 9 and 10 of the flange-plate are formed alining perforations 15 and 16, and with these perforations is engaged the flange-screw 17, through the medium of which the flange is held and clamped against the hammer-rail.

In the initial application of the parts to the hammer-rail the flange ends are deflected, and by turning up the flange-screw said ends are brought together, or the outermost end is pressed inwardly, the reactionary tendency of the outermost part having the effect of holding the flange-screw frictionally against rotation and consequent displacement, while the inward movement thereof causes a gripping action in the bearing of the pivot-pin, with the result that the pin is held securely against displacement. Rocking movement of the flange is effectively prevented by engagement of the foot of the flange with the groove of the rail.

It will be understood that in practice various modifications of the specific construc-

tion shown may be made and that any suitable materials and proportions may be used without departing from the spirit of the invention. In the drawings the flange is also shown in connection with a damper 20 and is held upon the top of the rail 5 by means of a screw 17 in the same manner as in the former instance, the damper-lever being connected with the flange in the same manner as is the hammer.

In connection with the damper there is employed the usual spring 21 for returning it from its active position, and to hold this spring in proper relation to the damper-lever a supplemental plate 22 is employed. This plate, as shown in detail in Fig. 4 of the drawings, comprises a rectangular body portion adapted to rest upon the broadened part of the flange and having a perforation 23, through which the screw 17 is passed to hold the plate against the flange, said plate having its lower end bent rearwardly to engage over the end of the flange and prevent pivotal movement of the plate on the screw as an axis. In the sides of the plate 22 and beyond the perforation thereof from the bent end are formed cuts, and the material beyond these cuts is bent upwardly at right angles to form ears 24 and 25, in which are formed alining perforations. In placing the plate 22 upon the flange the ears are disposed away from the flange, and between them is disposed the loop 27 of the spring-wire 21, one end of which rests against the plate 22, while the opposite end is taken upwardly and rests against the damper-lever. A pin 30, engaged with the perforations of the ears 24 and 25 and the loop 27, holds the spring in position.

From the foregoing it will be seen that the flange may be used in different capacities and with different adjuncts to specially fit it for its various uses.

What is claimed is—

1. A flange adapted for direct attachment to a flange-rail and comprising a spring-metal plate bent upon itself to form diverging members, the bight of the plate being bent to form a split cylindrical bearing and the end portions of said members having openings therein to receive a flange-screw to hold the plate in position upon a flange-rail and with the bight projecting beyond the rail, and to vary the diameter of the bearing without varying the shape of its inclosure.

2. A flange comprising a spring-metal plate

bent upon itself to form diverging members, the bight of the plate being bent to form a split annular bearing, the edge of one end portion of the plate being bent laterally to form an engaging foot and the second end portion being movable toward and away from the first end portion to vary the diameter of the bearing without changing its shape and both members having alining perforations formed therethrough remote from the bearing to receive a combined attaching and clamping screw.

3. A flange comprising a spring-metal plate bent upon itself to form diverging members and the bight of the plate being bent to form a split cylindrical bearing, the end portions of the plate being broadened and perforated to receive attaching means and the extremity of one member being bent laterally to form an attaching foot.

4. The combination with a rail having a longitudinal slot of a flange consisting of a spring-metal plate bent upon itself and having alining perforations in its end portions, the extremity of one end portion being bent laterally and engaged with the slot of the rail, and a screw passed through the perforations and into the rail to compress the members of the plate, and the bight of the plate being bent to form a split cylindrical bearing.

5. In a piano-action, the combination with a flange comprising a spring-metal plate bent upon itself to form diverging members having openings therein, of a lever having an opening to receive the bight of the plate, a pivot-pin engaged with the lever and passed between the diverging members at the bight thereof, a second plate disposed upon the flange-plate and having upwardly-bent portions forming ears and having alining perforations, a spring-wire having a loop disposed between the ears, a pin passed through the perforations and the loop, the ends of the wire resting against the lever and the plate respectively, and a screw passed through the plates to hold them in correlative positions and to clamp the members of the flange-plate upon the pin therebetween.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FREDERICK C. BILLINGS.

Witnesses:

ELMER L. ENGLISH,
RASS LARRABEE.