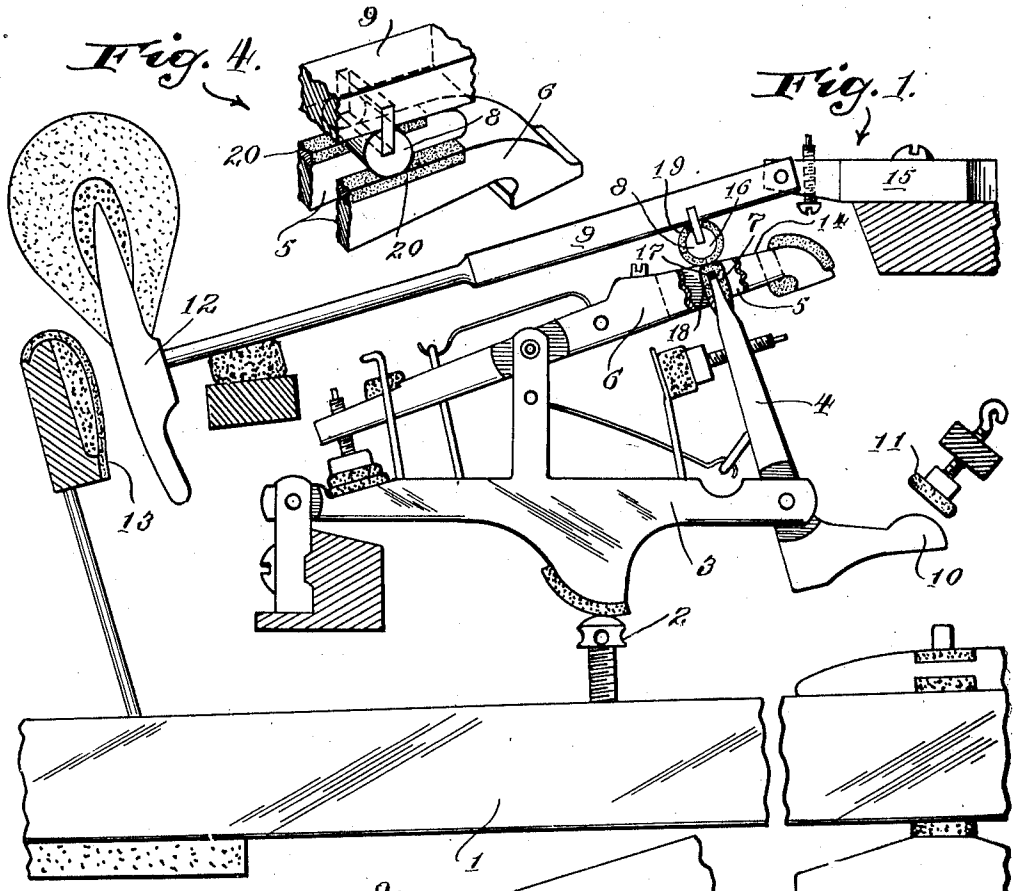
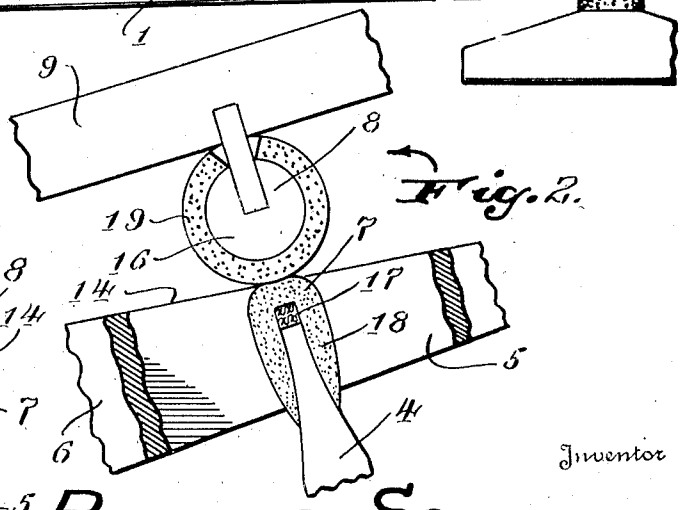
Nov. 16, 1943. R. SCHULZE 2,334,444

ESCAPEMENT ACTION FOR GRAND PIANOS

Filed Aug. 19, 1942





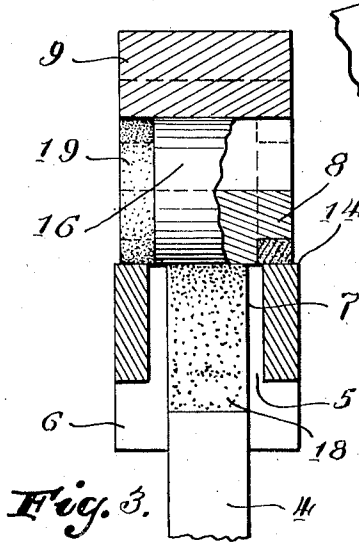


Fig. 3.

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ESCAPEMENT ACTION FOR GRAND PIANOS

Reinhard Schulze, Baltimore, Md.

Application August 19, 1942, Serial No. 455,275

5 Claims. (Cl. 84—239)

This invention relates to an improvement in the escapement action for grand pianos. A grand piano action is a very complicated and delicate mechanism and its manufacture, installment and regulation are necessarily very expensive; so has been its maintenance.

The knuckle of the hammer is double padded where it is struck by the jack. The jack not only strikes this knuckle in its rectilinear motion, it also slides over it in a direction substantially at right angles to that motion. After usage the outer padding on the knuckle stretches, both layers of padding get hard and sometimes they flatten or have a groove or a pit formed in them by the jack head. When this occurs, the padding should be replaced, but in the great majority of cases, the stretched and compacted knuckle is continued in service, until more serious defects arise, and these take the form of breaking of the hammer stem or the hammer shank flange, or at times the knuckle of the jack is broken off. The keys of the piano are often struck vigorously, and this sudden impact is transferred directly to the hammer knuckle and if the jack cannot strike that knuckle and slide off, as is intended, the weak part of these members will break. Continuing these stretched and compacted knuckles in use also diminishes the original sensitive touch of the keys, impairing and limiting concert playing.

The objects of this invention are to construct the knuckle and jack and the cushioning therebetween so that this stretching, flattening, grooving and pitting of the padding between them will be avoided and so that, even with age and without replacement the sensitive touch will be maintained and no breakage of the parts will occur.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawing forming a part hereof, and in which:

Figure 1 is a fragmentary vertical sectional view through a grand piano action embodying the novel features of the present invention.

Figure 2 is an enlarged fragmentary view of the hammer knuckle and jack head.

Figure 3 is a detailed sectional elevation of the parts shown in Figure 2, viewed from the right.

Figure 4 is a fragmentary perspective view of a modified form of padding for the hammer knuckle.

Referring now to the drawing, 1 is the piano key, 2 the capstan thereon, 3 the wippen engaged by the capstan, 4 is the jack which works through a slot 5 in repetition lever 6. The head 7 of the jack engages the knuckle 8 on hammer stem 9. Upon striking the key 1, and before it returns to its position of rest, the jack 4 strikes knuckle 8 and throws the hammer up, before it strikes the wire or piano string, jack knuckle 10 striking its button 11, causes the jack head 7 to slide from and be disengaged from hammer knuckle 8, and after striking the wire, the hammer head 12 comes to rest on back check head 13. When a key is struck hard, the hammer stem 9 at its small section and at its hinge, and the hammer flange 15 and the jack near the knuckle 10 are subjected to severe strain.

Knuckle 8 has usually been double cushioned and the head 7 of the jack was not cushioned, and as the head is dug into the cushion on knuckle 8, and was drawn across it, the head stretched, compressed, grooved and pitted the cushion until the head no longer easily slid from knuckle, the sensitive touch was lost and strain was added to the parts named and one of them often broke.

By this invention the knuckle 8, in the preferred form, has a round rigid center 16 and the head 7 of the jack is cushioned by an underlay of cloth 17 and an overlay of leather 18 in such manner as to present a flat face to strike the knuckle 8. Even should the cushion on head 7 be compressed it will not groove or pit, it will remain flat, and it will always perform its function of striking the knuckle and easily sliding therefrom when moved at right angles to the face of the knuckle 8 which was struck, because of the knuckle 10 of the jack striking its button 11. The sensitiveness of touch will remain.

Also, by this invention, the ends of the knuckle 8 are cut out circumferentially and have circular leather inserts 19 which make contact with shoulders 14 of repetition lever 6.

As a modified form, strips of leather 20 may be placed on shoulders 14 and the knuckle 8 may be completely of rigid material as shown in Figure 4. Either of these forms prevent clatter upon contact between the knuckle and repetition lever.

Other means have been devised to maintain the sensitive touch after long usage and to prevent the breakage of parts, but it is believed that none so simple and inexpensive as that herein described has been invented or discovered.

What is claimed as new and is desired to be secured by Letters Patent is:

1. In a grand piano escapement action, a wippen, a jack pivoted in one end of said wippen and a repetition lever pivoted on said wippen, said

lever having an opening in one end, the jack having a padded head projecting through said opening, a hammer stem pivotally supported at one end and above said lever, and having a hammer at the other end, a knuckle on said stem adjacent the pivoted end, said knuckle having a rigid portion over said jack head adapted to be struck thereby upon operation of the action and to slide therefrom after impact, said knuckle tending to contact the lever during a part of said operation, and means between said knckle and lever to deaden the sound of contact.

2. In a grand piano escapement action, a wippen, a jack pivoted in one end of said wippen and a repetition lever pivoted on said wippen, said lever having an opening in one end, the jack having a padded flattened top head projecting through said opening, a hammer stem pivotally supported at one end and above said lever and having a hammer at the other end, a knuckle on said stem adjacent the pivoted end, said knuckle having a rounded rigid portion above said flattened top jack head adapted to be struck thereby upon operation of the action and to slide therefrom after impact, said knuckle tending to contact the lever during a part of said operation and means between said knuckle and lever to deaden the sound of contact.

3. In a grand piano escapement action, a wippen, a jack pivoted in one end of said wippen and a repetition lever pivoted on said wippen, one end of said lever having a shoulder on each side thereof, the jack having a padded head projecting between said shoulders, a hammer stem pivotally supported at one end and above said lever and having a hammer at the other end, a knuckle on said stem adjacent the pivoted end, said knuckle having a rounded rigid portion over said jack head adapted to be struck thereby upon operation of the action and to slide therefrom after impact, said knuckle tending to contact the shoulders of said lever during a part of said operation, and padding between said shoulders and knuckle to deaden the sound of contact.

4. In a grand piano escapement action, a wippen, a jack pivoted in one end of said wippen and a repetition lever pivoted on said wippen, one end of said lever having a shoulder on each side thereof, the jack having a padded head projecting between said shoulders, a hammer stem pivotally supported at one end and above said lever and having a hammer at the other end, a knuckle on said stem adjacent the pivoted end, said knuckle having a rounded rigid portion over said jack head adapted to be struck thereby upon operation of the action and to slide therefrom after impact, said knuckle tending to contact the shoulders of said lever during a part of said operation, said knuckle having padded end portions to bear upon said shoulders to deaden the sound of contact of said knuckle on said shoulders.

5. In a grand piano escapement action, a wippen, a jack pivoted in one end of said wippen and a repetition lever pivoted on said wippen, one end of said lever having a shoulder on each side thereof, the jack having a padded head projecting between said shoulders, a hammer stem pivotally supported in one end above said lever and having a hammer at the other end, a knuckle on said stem adjacent the pivoted end, said knuckle having a rounded rigid portion over said jack head adapted to be struck thereby upon operation of the action and to slide therefrom after impact, said knuckle tending to contact the shoulders of said lever during a part of said operation, said shoulders having pads thereon between the shoulders and knuckle to deaden the sound of contact.

REINHARD SCHULZE.