

**986,556.**

*Fig. 4.*

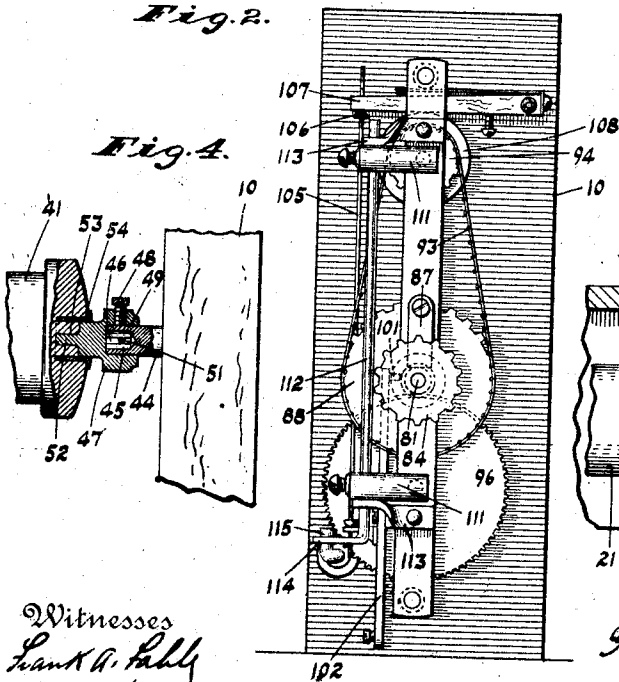
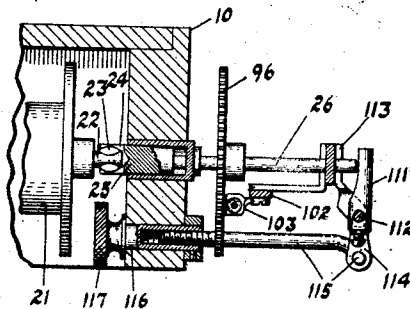


Fig. 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

FRANCIS W. DRAPER, OF RICHMOND, INDIANA, ASSIGNOR TO STARR PIANO COMPANY,  
OF RICHMOND, INDIANA, A CORPORATION OF INDIANA.

## MUSIC-SHEET DRIVER.

986,556.

Specification of Letters Patent.

Patented Mar. 14, 1911.

Application filed May 9, 1910. Serial No. 580,272.

### *To all whom it may concern:*

Be it known that I, FRANCIS W. DRAPER, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented a new and useful Music-Sheet Driver, of which the following is a specification.

The object of my invention is to produce a mechanism for driving a perforated sheet over the tracker board of an automatic player mechanism for pianos, of such character that the music sheet may be very readily caused to properly register with the perforations of the tracker board without distorting the sheet; such that the sheet may be maintained under the proper tension at all times; with a gear shifting mechanism of such character that the driving chain for re-winding will not be disturbed; and with such other improvements in details of construction as may be hereinafter pointed out.

The accompanying drawings illustrate my invention.

Figure 1 is a front elevation in partial vertical section; Fig. 2 an end elevation; Fig. 3 a section on line 3—3 of Fig. 1, and Fig. 4 a sectional detail of the connection between the re-wind shaft and a storage roll.

In the drawings, 10 indicates the usual supporting frame or box in which is mounted a tracker board 11. Secured to the outer face of one end of box 10 is a plate 12 provided near its opposite ends with two spring cups 13 and 14 the inner ends of which are projected into openings 13' and 14' formed through the end wall of the box at opposite sides of the tracker board. Mounted in cup 13 is a plunger 15 normally held projected by means of a spring 16 mounted within the cup 13 and the plunger is held against too great a projection by means of a collar 17 secured to it. The inner end of the plunger is provided with a cup or socket 18 adapted to rotatably receive the axial pin 19 of the winding roll 21. The opposite end of roll 21 is provided with a pin 22 having the usual radial extensions 23 formed to be received in the slots 24 of a head 25 carried by the main driving shaft 26 which is journaled in a suitable bearing mounted in the adjacent end wall of box 10, the said shaft being alined with plunger 15. Mounted in cup 14 is a plunger 31 normally projected by

means of a spring 32 contained within cup 14, and held against too great projection by means of collar 34. The inner end of plunger 31 is provided with a socket 35 within which is rotatably mounted a head 36. The head 36 is held against withdrawal by means of a pin 37 which is projected into a circumferential slot 38 formed in the shank of the head, and said head, at its exposed end, is provided with a conical exterior 39 adapted to be received into the opening 40 of one make of storage rolls 41, and said head is also provided with an axial pocket 42 adapted to receive the axial pin of another make of storage rolls. Journaled in the opposite end of box 10, in alinement with plunger 31, is a re-wind shaft 43 provided at its inner end with a head 44 like head 25, said head being provided with a central bore 45 and diametrically opposed radial slots 46 adapted to receive the radial projections of the axial pin of that type of storage rolls provided with such an axial pin as would be received by the pocket 42. In order to adapt the head 44 to receive that type of storage rolls 41 illustrated in the present drawings, I provide a readily removable head 47 held in position by a thumb screw 48. Head 47 at one end is provided with bore 49 adapted to receive head 44, and extending diametrically across this bore is a pin 51 adapted to be received in the slots 46 of the head 44. At its opposite end the head 47 is provided with a diametrical tongue 52 adapted to enter a slot 53 formed in the bottom of the bore of roll 41.

Plate 12 carries, at a point adjacent cup 13, a spring cup 71 which is projected through a suitable opening in the end wall of box 10 and mounted in this cup is a plunger 72 normally projected by means of a spring 73. Secured to the exposed end of plunger 72 is a piece of friction material 74 adapted to bear against the flange 75 of the driving roll 21. This piece of friction material 74 wears out in time and, in order that it may be readily replaced, I provide a retaining ring 76 the bore of which is of such diameter that a circular piece of leather may be readily placed over the end of plunger 72 and the ring 76 then forced down over the plunger and the leather so as to clamp the edge of the leather between the ring and plunger as clearly shown in Fig. 1.

Journalled between shafts 26 and 43 is the main shaft 81. This shaft near its outer end is provided with one or two radially projecting pins 82. Sleeved upon the outer end of shaft 81 is the hub 83 of the main driving sprocket 84 and this hub is provided with axial slots 85 in which pins 82 project and in which they may slide. Hub 83 near its inner end is provided with a circumferential slot 86 into which is projected a stationary retaining finger 87. Journalled freely upon shaft 81 is a large sprocket wheel 88 the hub of which is provided with a circumferential slot 89 into which is projected a retaining finger 91. Sprocket wheel 88 is provided on its inner face with the usual axially projecting clutch pin 92 and passing over said sprocket wheel is a sprocket chain 93 which passes to a sprocket pinion 94 secured to shaft 43. Rigidly secured to shaft 81 is a pinion 95 adapted to be thrown into and out of mesh with a gear 96 secured to shaft 26. Pinion 95 is carried by a collar 97 which is provided with a clutch pin 98 adapted to be projected into engagement with clutch pin 92, and is also provided with a circumferential groove 99 adapted to receive a pin 101 carried by a usual shifting lever 102. Shifting lever 102 carries a finger 103 arranged to engage a head 104 carried by the lower end of rod 105 the upper end of which carries a head 106 lying beneath a brake arm 107 which is yieldingly urged into engagement with a brake wheel 108 secured to shaft 43. Shafts 26 and 43 are freely slidable axially through their bearings, and are urged in one direction, when rolls 21 and 41 are in place, by means of springs 16 and 31.

In order to form abutments for the shafts 26 and 43 I provide two fingers 111, 111 which are carried by a vertical rock shaft 112 journalled in suitable brackets 113. At its lower end, shaft 112 is provided with an arm 114 to which is connected one end of a threaded rod 115, the threaded portion projecting into a nut 116 journalled in the adjacent end wall of box 10 and, at its inner end, provided with a knurled head 117 readily accessible by the operator.

In operation, an adjustment of head 117 will rock shaft 112 so that its fingers 111 will be shifted and thus regulate simultaneously the positions of shafts 26 and 43 against the pressure of the springs 16 and 31 respectively, and thus shift the two rolls 21 and 41 simultaneously axially so as to shift the music sheet longitudinally of the tracker board and thus accurately register the perforations of the music sheet with the openings in the tracker board. This adjustment, by carrying both rolls simultaneously, maintains the music sheet properly upon the rolls so that there will be no inclination to improperly wind upon either

of the rolls. During the playing operation brake 107 is in engagement with brake wheel 108 so that a proper tension is maintained upon the music sheet and during the re-winding operation the friction exerted upon flange 75 by the friction piece 74 of plunger 72 will insure a properly tight re-winding of the music sheet upon storage roll 41.

By shifting lever 102 pin 98 may be withdrawn from the path of movement of pin 92 and pinion 95 thrown into mesh with gear 96, or pinion 95 may be withdrawn from gear 96 and pin 98 thrown into position to engage pin 92. Shaft 81 is shifted axially during this operation but the sprocket wheels 84 and 88 are not shifted and consequently the alinement of chain 93 and of the main driving chain passing over sprocket wheel 84 will not be disturbed.

I claim as my invention—

1. In a musical instrument the combination with a tracker board, of two driving shafts journalled upon opposite sides of the tracker board, driving means for alternately driving said shafts in opposite directions, a winding roll associated with one of said shafts and provided with an end flange, a spring-pressed plunger, a friction sheet embracing the end of said plunger and engaging the flange, and a ring embracing the edge of said sheet.

2. In a musical instrument, the combination with a tracker board and its inclosing casing, of two driving shafts journalled in said casing on opposite sides of the tracker board at one end thereof, a plate adapted to be secured to the opposite end of the casing and carrying two spring cups spaced to correspond with the spacing of the two driving shafts, a plunger mounted in each of said cups and each having an exposed end adapted to cooperate with a music-roll, a spring mounted in each cup behind its plunger to yieldingly project its plunger toward the driving shaft with which it is alined, a third spring cup carried by said plate adjacent the spring cup provided to cooperate with a winding roll, the said winding roll arranged between its spring-pressed plunger and its driving shaft, a spring arranged in said third cup, and a plunger also arranged in said third cup on top of the spring and provided at its outer end with a friction-surface adapted to engage the winding roll.

3. In a musical instrument, the combination with a tracker board and its inclosing casing, of two driving shafts journalled in said casing on opposite sides of the tracker board at one end thereof, a plate adapted to be secured to the opposite end of the casing and carrying two spring cups spaced to correspond with the spacing of the two driving shafts, a plunger mounted in each of said cups and each having an exposed end adapted to cooperate with a music-roll, a spring

mounted in each cup behind its plunger to  
yieldingly project its plunger toward the  
driving shaft with which it is alined, a third  
spring cup carried by said plate adjacent the  
5 spring cup provided to cooperate with a  
winding roll, the said winding roll arranged  
between its spring-pressed plunger and its  
driving shaft, a spring arranged in said third  
cup, a plunger also arranged in said third  
10 cup on top of the spring, a friction sheet em-  
bracing the exposed end of said last men-  
tioned plunger, and a ring having an inter-

nal diameter sufficient to clamp the edges of  
the friction sheet about the end of the plun-  
ger.

In witness whereof, I, have hereunto set  
my hand and seal at Richmond, Indiana,  
this third day of May, A. D. one thousand  
nine hundred and ten.

FRANCIS W. DRAPER. [L. s.]

Witnesses:

E. H. HILL,

F. D. WIGGINS.

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