

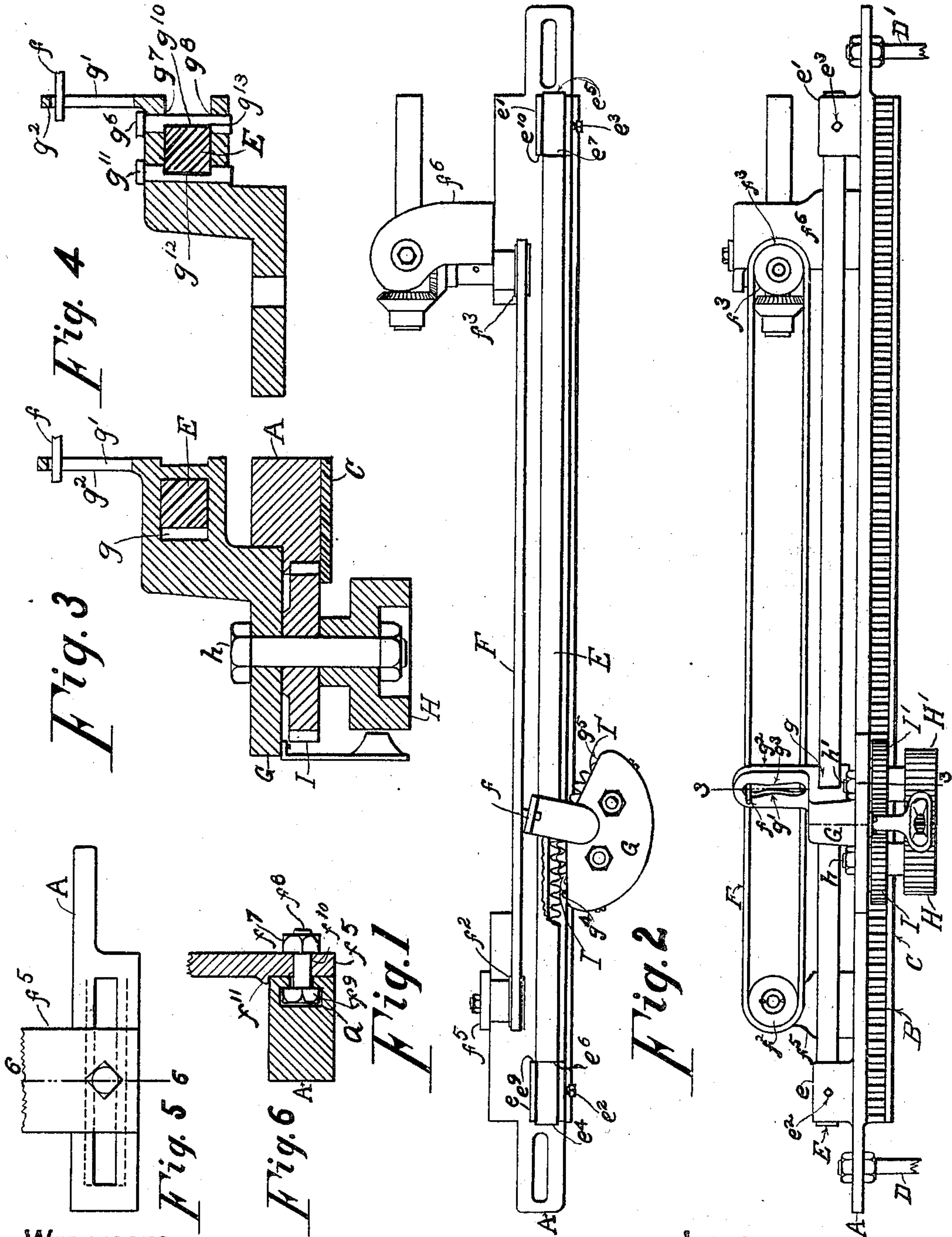
No. 812,863.

PATENTED FEB. 20, 1906.

P. L. McBRIDE.

FEEDING MECHANISM FOR CARDING MACHINES.

APPLICATION FILED APR. 24, 1905.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## FEEDING MECHANISM FOR CARDING-MACHINES.

No. 812,863.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed April 24, 1905. Serial No. 257,045.

*To all whom it may concern:*

Be it known that I, PATRICK L. McBRIDE, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Feeding Mechanism for Carding-Machines, of which the following is a specification.

This invention relates to feeding mechanisms for carding-machines, in which feeding mechanisms a carriage or traveler body is supported on a horizontal guide-rail and is caused to traverse thereon diagonally over feed-aprons by means of a moving belt, chain, or equivalent means. Usually the traveler carries a swiveling plate, on which are supported a pair of feed-rolls, each having a gear rotary therewith and engaging the gear of the other feed-roll, and the swiveling of said plate at the end of the traverse causing the rearmost gear (according to the direction in which the traveler is moving) to engage a stationary rack, so that the rotation of the gears and feed-rolls is always in the same direction.

I use no swiveling plate as distinct from the body of the traveler, but support the gears and feed-rolls directly on the traveler-body and provide means for swiveling said body directly on said guide-rail. The pivot of the swiveling plate as commonly used frequently becomes so loose that the plate chatters or rattles and the gears do not properly engage the rack, so that the ends of the teeth of a gear will strike the ends of the teeth of the rack and swing the whole traveler away from the rack and break the sliver, this being easily possible from the fact that the guide-rail is usually cylindrical. I prefer to make the guide-rail with flat parallel upper and lower surfaces, so that the traveler cannot swing forward out of proper engagement with the rack, but can only turn to throw one gear into and the other gear out of such engagement.

It sometimes happens that the pivot of the usual swiveling plate becomes clogged by dirt and flyings, so that said plate will not swivel, and the reversal of the direction of the traverse reverses the direction of rotation of the feed-rolls, so that the sliver is pulled away from the presser-bar and broken. I avoid this by arranging the swiveling and supporting surfaces of the traveler so far above the usual pivot that they are very

slightly, if at all, exposed to such dirt and flyings. I have also shown and I hereinafter describe improved means for connecting the traveler to the driving belt or chain to insure a quick swiveling movement of the traveler at the end of the traverse and means for quickly adjusting and securing the stands which support the driving belt or chain when necessary to vary the tension or length of either of them. The weight of the movable parts is by this improvement greatly diminished, the construction is simplified, and the cost lessened.

In the accompanying drawings, Figure 1 is a plan of my improved carding mechanism or attachment; Fig. 2, a front elevation of the same; Fig. 3, a vertical section of the upper part of the traveler-body and through a feed-roll and its gear on the line 3 3 in Fig. 2, showing also the rack and rails in vertical section at right angles to their length; Fig. 4, a similar vertical section of a slightly-modified traveler-body and guide-rail; Fig. 5, a rear elevation of a part of the supporting-bar and of a part of a wheel-stand and adjustable connecting means; Fig. 6, a vertical section on the line 6 6 in Fig. 5.

The supporting-bar A, the rack-rail B, and presser-plate C, both supported on said bar, are of the usual construction and serve the usual purposes, the presser-plate being arranged diagonally above feed-aprons in the usual manner upon studs D D'.

The guide-rail E is supported in stands *e e'*, secured on the supporting-bar much nearer to said supporting-bar than has heretofore been practiced, and said guide-rail is also arranged in front of and lower than the driving belt or chain F instead of above and back of the same, as usual hitherto. This new arrangement facilitates inspection of and access to the feed-aprons, the supporting-bar, the rack-rail, the presser-plate, and the top of the traveler.

The guide-rail stands *e e'* open at the top to enable the guide-rail E to be placed in them from the top instead of being pushed through them end first, and said rail may be held in said stands by set-screws *e<sup>2</sup> e<sup>3</sup>*, which turn in said stands radially against said rail; but said rail may be securely held in place by its own weight and the weight of the traveler, as stated below.

The guide-rail E instead of being of circular



cross-section is flat on top and is preferably square or rectangular in cross-section, except as hereinafter stated, to furnish a broader and better support for the traveler G.

5 In Fig. 1 the end portions of said guide-rail are provided with cylindrical bearings  $e^4$   $e^5$ , and the shoulders  $e^6$   $e^7$ , where said bearings start from the rectangular part of said rail, will bear against the inner faces  $e^9$   $e^{10}$  of  
10 the stands  $e$   $e'$  and prevent said rail from longitudinal movement, while allowing said rail to be turned by drawing forward the lower part of the traveler when necessary for inspecting, cleaning, oiling, or removing the  
15 feed-rolls from the traveler and to allow the gears to disengage from the rack when the latter is clogged by waste.

The traveler-body G is provided with a lateral opening  $g$ , having horizontal flat upper  
20 and lower surfaces and having a sufficient depth to admit the guide-rail E and an extent from front to back sufficient to allow the traveler to swivel the requisite amount to bring either of the feed-roll gears into engagement with the rack of the rack-rail B. The  
25 traveler is swiveled by the continuous movement of the chain or belt F, (a chain being more commonly used,) which is provided with a horizontal pin  $f$ , which engages a slot  
30  $g'$  in a vertical projection  $g^2$ , which rises from said traveler at the back of the guide-rail and preferably in front of the chain, it being essential that the chain should be in the opposite side of the point where the swiveling  
35 takes place from the feed-rolls H H' or in practice on the opposite side of the guide-rail from said feed-rolls in order that the pull of said chain acting on the rearmost part of the traveler may tend to draw the following  
40 feed-roll gear I, Figs. 1 and 2, into engagement with the rack and the leading feed-roll gear out of such engagement. In Figs. 1 and 2 the traveler is represented in the position it occupies with relation to the guide-rail when  
45 moving to the right. Each gear I I' is rigidly secured to a feed-roll H H', and the gear and corresponding feed-roll turn together upon a stud  $h$   $h'$ , secured to the traveler, as these parts are commonly secured to the  
50 swiveling plate. The part G in this invention might be considered a "swiveling plate" supported directly on the guide-rail.

The slot  $g'$  is considerably wider at its upper and lower ends than the pin  $f$ , but is  
55 gradually contracted toward the middle, where at  $g^3$  it is only wide enough to allow said pin to pass up or down (as the case may be) freely when said pin  $f$  is passing over one of the chain-supporting wheels  $f^2$   $f^3$ . The  
60 pin  $f$  in passing from one side to the other of the slot  $g'$  gives a sudden impulse to the traveler and causes the latter to swivel quickly and the following feed-roll gear to engage the rack before the pin has reached its highest or

lowest position. The wheels  $f^2$   $f^3$  are supported on stands  $f^5$   $f^6$ , and one of said wheels  $f^4$  is positively driven in the usual manner and through the flexible connection or chain F drives the other  $f^3$ .

It is sometimes necessary to lengthen or  
70 shorten the chain to vary the traverse of the traveler and becomes desirable to vary the distance apart of the stands  $f^5$   $f^6$ . This may be done by loosening a nut  $f^7$ , which turns on the rear end of a bolt  $f^8$ , which extends  
75 through a hole  $f^{10}$  in the stand  $f^5$ , the head  $f^9$  of said bolt  $f^8$  being arranged in a T-groove  $a$  in the back of the supporting-bar A, which prevents said bolt from being drawn out, but allows it to be moved laterally when said nut  
80 is loosened. When the nut  $f^7$  is tightened, the stand  $f^5$  is securely clamped, and said stand is prevented from tipping over laterally when said nut is loosened by a horizontal rib  $f^{11}$ , which normally rests on the top of  
85 the supporting-bar A.

The traveler-body G is provided with two vertical plane surfaces  $g^4$   $g^5$ , which may meet each other at an angle at the middle of said body on the back thereof and alternately  
90 rest against the front of the supporting-bar A, as similar surfaces on the swiveling plate commonly do, to limit the swiveling movement of the traveler and to prevent the following gear from crowding too far into the  
95 rack.

The back wall of the opening  $g$  may be integral with the body of the traveler, as shown in Fig. 3, or may be a pin  $g^6$ , as shown in Fig.  
100 4, which pin passes down vertically through holes  $g^7$   $g^8$  at the rear of the guide-rail and forms a sufficient back for said opening  $g$ . The pin  $g^6$  might be of uniform diameter and readily removable to permit the traveler to  
105 be removed from the guide-rail and replaced thereon quickly and easily; but I prefer to use the construction shown in said Fig. 4, where the pin  $g^6$  is flattened on the front side at  $g^{10}$  for a sufficient distance to admit the  
110 back of the guide-rail, the flattened surface  $g^{10}$  serving as a bearing on the guide-rail, and where another pin  $g^{11}$ , precisely like the pin  $g^6$ , but turned in the opposite direction, has a flattened surface  $g^{12}$ , which bears on the front of said guide-rail. The distance be-  
115 tween the flattened surfaces  $g^{10}$   $g^{12}$  of the pins  $g^6$   $g^{11}$  is slightly greater—about one thirty-second of an inch greater—than the horizontal thickness of said guide-rail, which permits the traveler to turn sufficiently on said  
120 rail to bring either of the gears into engagement with the rack B. By extending the flat surface  $g^{11}$  of the pin  $g^6$  to the bottom of said pin, as indicated by the line  $g^{13}$ , Fig. 4, said pin may be taken out to allow the trav-  
125 eler to be removed from the rail without removing said rail from one or both of its supporting-stands  $e$   $e'$ . In the construction



shown in Fig. 4 the flat surface  $g^{12}$  on the pin  $g^{11}$  lies alternately in the same plane with the surfaces  $g^4 g^5$ , according to the direction in which the traveler is moving.

5 I claim as my invention—

1. The combination of a guide-rail, a traveler-body supported by said rail and adapted to swivel directly on said rail, a traveling belt or chain arranged at the rear of said guide-rail and engaging said traveler-body, a pair of gears carried by said traveler-body and engaging each other, a pair of feed-rolls, each rotary with one of said gears, and a rack normally engaging the following one of said  
15 gears.

2. The combination of a guide-rail having a flat upper surface, a traveler-body having a lateral opening, the upper surface of which is flat and rests upon the upper surface of said  
20 rail, a traveling belt or chain arranged at the rear of said rail and engaging said traveler, a pair of gears carried by said traveler and engaging each other, a pair of feed-rolls each rotary with one of said gears, and a rack to engage the following one of said gears.  
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3. The combination of a guide-rail having a flat upper surface, a traveler-body having an opening from side to side across the back thereof, adapted to receive said guide-rail, means for closing said opening back of said  
30 rail, said traveler-body being adapted to swivel on said rail, a traveling belt or chain arranged at the rear of said rail and engaging said traveler, a pair of gears carried by said traveler and engaging each other, a pair of feed-rolls each rotary with one of said gears, and a rack to engage the following one of said  
35 gears.

4. The combination of a guide-rail having a flat upper surface, a traveler-body having an opening from side to side across the back thereof, adapted to receive said guide-rail, a pin passing down through said traveler and opening back of said rail to retain said traveler on said rail, said traveler being adapted to swivel on said rail, a traveling belt or chain arranged at the rear of said rail and engaging said traveler, a pair of gears carried by  
40 said traveler and engaging each other, a pair of feed-rolls each rotary with one of said  
50

gears, and a rack to engage the following one of said gears.

5. The combination of a guide-rail having a flat upper surface, a traveler-body having an opening from side to side across the back thereof adapted to receive said guide-rail, said traveler being adapted to swivel on said rail, pins passing down through said traveler and opening in front of and back of said rail and having flattened surfaces to bear against  
55 said rail, said pins being free to turn in said traveler when said traveler swivels and to bear upon the front and rear of said rail when said traveler is in either of its operative positions, a traveling belt or chain arranged at the rear of said rail and engaging said traveler, a pair of gears carried by said traveler and engaging each other, a pair of feed-rolls, each rotary with one of said gears, and a rack to engage the following one of said gears.  
60 65 70

6. The combination of a guide-rail, a traveler provided with a slot having enlarged upper and lower ends and a gradually-contracted portion midway between the ends, a traveling belt or chain having a pin to engage said slot, a pair of gears carried by said traveler and engaging each other, a rack adapted to engage the following one of said gears and feed-rolls each rotary with one of said gears.  
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7. The combination of a supporting-bar, provided with a longitudinal T-slot, a bolt having a head arranged in said slot and laterally movable therein, a roll-stand having a transverse rib or projection to rest on said supporting-bar and having a hole to surround  
80 said bolt and a nut to engage said bolt and to clamp said stand against said bar.  
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8. The combination of guide-rail stands, a guide-rail, a traveler supported on and turning with said rail, said rail being adapted to turn in said stands but provided with means for preventing its longitudinal movement therein.  
90

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

PATRICK L. McBRIDE.

Witnesses:

ALBERT M. MOORE,  
GRACE CROWLEY.