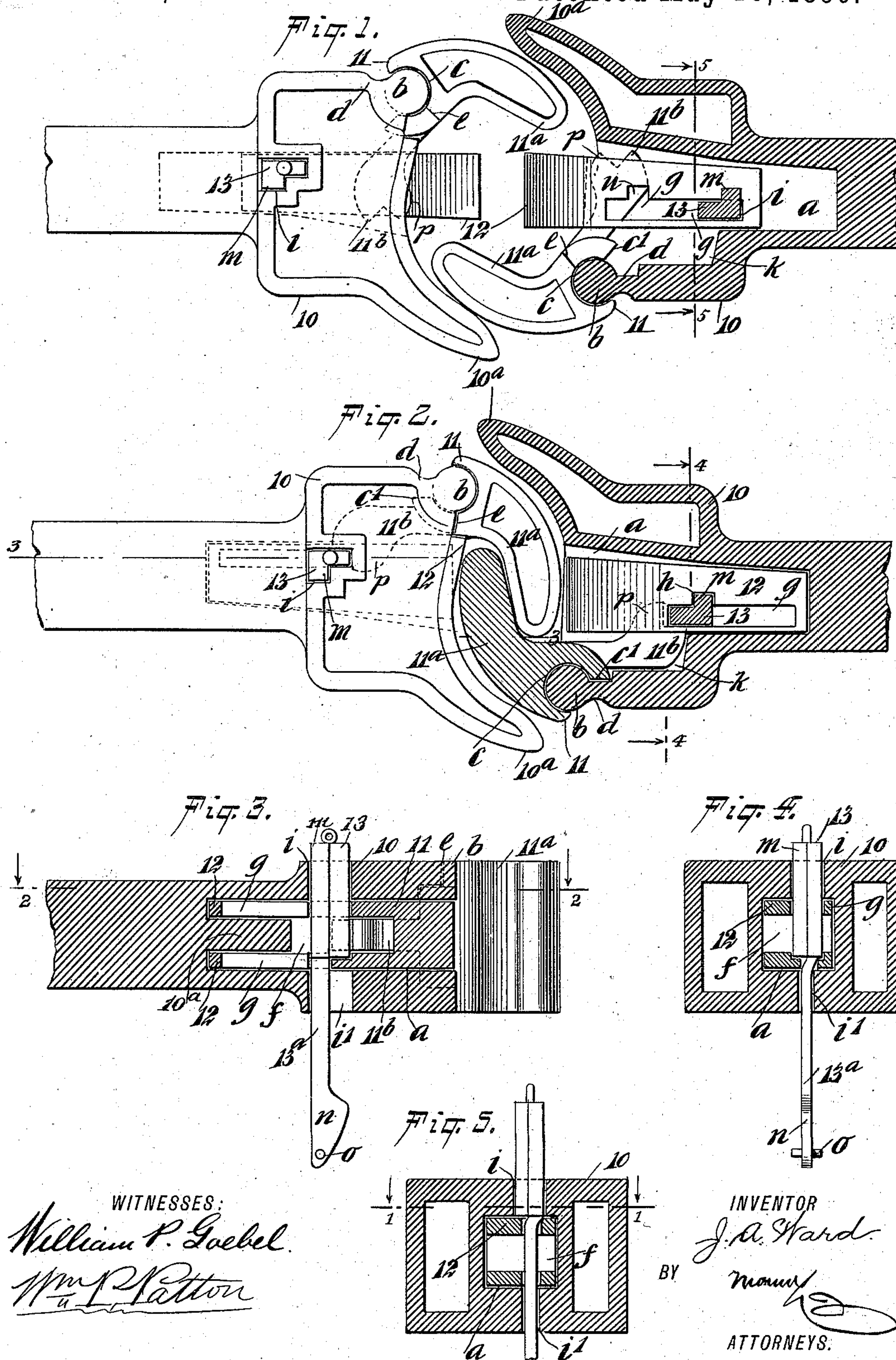


(No Model.)

J. A. WARD.
CAR COUPLING.

No. 560,606.

Patented May 19, 1896.



UNITED STATES PATENT OFFICE.

JAMES A. WARD, OF DELTA, IDAHO, ASSIGNOR OF ONE-HALF TO THOMAS J. HAUCK AND FRANK M. HAUCK, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 560,606, dated May 19, 1896.

Application filed January 15, 1896. Serial No. 575,636. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. WARD, of Delta, in the county of Shoshone and State of Idaho, have invented new and useful Improvements in Car-Couplings, of which the following is a full, clear, and exact description.

This invention relates to car-couplings of the side-latching or Janney type, and has for its object to provide novel, simple, and practical features of construction for a car-coupling of the indicated character which will adapt it for reliable operation, dispense with a loose pintle-bolt between the knuckle and draw-head, afford a cheap and durable hinge-joint between said parts, and, furthermore, adapt the improved car-coupling for ready release when in a coupled condition with a similar coupling.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a partly sectional plan view of one of the improved couplings and a plan view of a similar coupling adjacent thereto, showing the knuckles of both couplings partially closed, the section-line being indicated at 1 1 in Fig. 5. Fig. 2 is a plan view of two couplings having the features of improvement, one in section showing the couplings in coupled condition, the section being indicated by line 2 2 in Fig. 3. Fig. 3 is a longitudinal sectional view substantially on the line 3 3 in Fig. 2. Fig. 4 is a transverse sectional view essentially on the line 4 4 in Fig. 2, showing the coupling-key lowered to lock working parts in closed adjustment; and Fig. 5 is a transverse sectional view substantially on the line 5 5 in Fig. 1.

The draw-head 10 is preferably cast into form from suitable metal, and has a chamber *a* produced in it of suitable dimensions extending from the front rearwardly, the said chamber having its top and bottom walls parallel. A horn 10^a is formed on the draw-head, curving outward and forward from one side wall of the same, and at the front on the op-

posite side wall integral therewith and also with the bottom wall a cylindric formation *b* is produced, extending vertically from the upper surface of the lower wall of the draw-head to the top surface of the same.

A knuckle 11 is provided, comprising the coupling-jaw 11^a and tailpiece 11^b, these parts, which are integral, being angularly disposed with regard to each other. The jaw 11^a is preferably rendered convex on its outer face, is flat or nearly so on its opposite or inner face, and has its free end rounded, as shown in Figs. 1 and 2. A cylindric channel *c* is produced in the knuckle at the junction of its coupling-jaw and tailpiece, and the said channel is essentially at right angles to the upper and lower faces of the coupling-jaw. The channel *c* is open on the outer side of the knuckle and has such a diameter as will adapt the cylindric formation *b* to enter and loosely fit in said channel if the knuckle is slid thereon starting from the upper end of the said formation.

The web *d* on the side wall of the draw-head which joins the formation *b* thereto is of such relative thickness compared with the width of the lateral opening in the knuckle-channel that when in position the knuckle will be permitted to rock on the said cylindric portion *b* as on a pintle, so that the coupling-jaw 11^a may be swung to open or close it.

In order to permit the jaw of the knuckle to rock on its joint into closed adjustment, as shown in Fig. 2, and thus couple with a similar jaw on another car-coupling of like construction, the upper side of the knuckle-jaw 11^a is preferably cut away at the inner curved wall of the channel *c*, so that a portion of said wall may loosely fit between the parallel top and bottom walls of the draw-head chamber *a* when the knuckle-jaw is to be closed, and when so adjusted the portion which projects into the said chamber will serve to prevent the knuckle from upward displacement on the draw-head.

The width of the slotted opening in the wall of the channel *c* is so proportioned that the said channel-wall will exceed a half-circle in extent, and therefore when in position the knuckle will be prevented from lateral displacement, as the cylindric body of the pintle

formation *b* cannot pass through the slotted opening mentioned.

It will be observed in Fig. 2 that the up-
right shoulder formed at *e* by the reduction
5 in height of the inner wall of the channel *c*
will impinge the front edge of the top wall of
the draw-head chamber *a* when the knuckle-
jaw *11^a* is fully closed, and thus limit the
closure of the knuckle. It will also be seen
10 at the right in said figure, where parts are in
section, that the edge *c'* of the slotted open-
ing in the cylindric channel *c* which is inner-
most will contact with the inner surface of
the web *d* at the time the shoulder *e* impinges
15 the front edge of the draw-head top wall, and
this will strengthen the joint by throwing
part of the pressure on said joint, due to a
forcible closure of the knuckle on the web or
the side wall of the draw-head. It is also pre-
ferred to make the jaw portion *11^a* of the
20 knuckle equal in vertical dimension with the
vertical thickness of the draw-head 10, and
if so made the knuckle at the joint-channel *c*
is cut away similarly to its reduction on the
upper side, as already explained, which will
25 permit the inner wall of the channel to rock
into the chamber *a* when the knuckle is closed,
this construction of parts being indicated by
dotted lines in Fig. 3.

30 Within the chamber *a* there is a slide-block
12 introduced, which is adapted to reciprocate
therein, and said block is longitudinally slot-
ted from the rear end parallel with its upper
and lower sides, which are parallel with each
35 other, the slot being indicated at *f* in Figs. 3,
4, and 5.

The slot *f* is adapted to loosely receive a
tongue-block *10^a*, that forwardly projects from
the rear wall of the chamber *a*, which block
40 affords support for the rear end of the slide-
block 12 when it is reciprocated. The block
12 is also vertically and longitudinally slotted
between its ends, as represented at *g*, this
slot extending through the defining-walls of
45 the horizontal slot *f* from a point near the
rear end of the slide-block forwardly a cor-
rect distance.

The sides of the longitudinal slot *g* are par-
allel or an equal distance apart, excepting
50 that a notch *h* is laterally formed in the top
wall of the slot *f* near the front end of the
same, extending vertically through said wall
and partly through the lower wall thereof.

At a point so removed from the front edge
55 of the top and bottom walls of the chamber
a as to vertically aline it with the laterally-
notched portion of the slot *g* in slide-block
12 when the latter is slid completely rear-
ward in chamber *a* an L-shaped vertical per-
60 foration *i* is formed in the upper wall of the
draw-head, as best shown at the left in Figs.
1 and 2, and directly below said perforation
a longitudinal slot *i'* of suitable length is
formed in the lower wall of the draw-head
65 chamber.

The tailpiece *11^b* is proportioned in length
to allow its free rear end to lie opposite the

notch *h* in the slot *g* when the knuckle is
closed and the slide-block 12 is rearwardly
moved its full travel. A sufficient width is 70
afforded the slot *f* to permit it to loosely re-
ceive the tailpiece *11^b*, and the latter is pro-
jected from the jaw *11^a* at such a point inter-
mediate of its top and bottom edges as will
75 permit the free rocking movement of the tail-
piece in said slot *f*. To afford room for the
tailpiece *11^b*, it is preferred to form a recess
k in the side wall of the draw-head toward
which the tailpiece folds when the knuckle
80 is closed, and when the tailpiece occupies
said recess the side of the same nearest the
slide-block 12 is made to vertically aline
with the adjacent side of the slot *g*, as is
shown at the right in Fig. 2.

A toe *p* is formed on the side of the tail- 85
piece *11^b* which is nearest the slide-block 12
when the knuckle is closed, and said toe is
adapted to have contact on its front edge
with the front wall of the horizontal slot *f*,
so that the swinging movement of the knuckle 90
outwardly will slide the block 12 outward.
A locking-key 13 of suitable metal is pro-
vided to hold the tailpiece *11^b* from leaving
the recess *k* when the knuckle is in coupled
95 connection with a similar knuckle on another
draw-head, the said key being formed essen-
tially as follows:

The body of the key has a wing *m* formed
on its upper portion, which wing is laterally
projected, affording an L shape in cross-section. 100
The winged portion of the key is de-
signed to loosely slide in the notched portion
of the slot *g* after passing through the L-
shaped perforation *i* in the draw-head, and
said portion of the key has sufficient length 105
to permit one end of the same to project
above the draw-head when the lower end of
the wing *m* is seated in the depression formed
to receive it in the lower wall of the horizon-
tal slot *f* of the slide-block 12. 110

An integral extension or shank *13^a* projects
from the body portion of the key 13, having
the lateral wing *m*, this shank being adapted
to slide in the vertical slot *g* of block 12 and
also in the longitudinal slot *i'* in the lower 115
wall of the draw-head. The key 13 in its
body portion having the wing *m* has such a
breadth, considered longitudinally of the
draw-head and slide-block, as to adapt the
key to loosely bear on the side of the tailpiece 120
11^b when the key is in lowered adjustment,
and to release the tailpiece the breadth of
the shank portion *13^a* of the key is reduced
sufficiently to allow the end of the tailpiece
to swing clear of the shank when the key has 125
been elevated far enough to remove the wing
m from the slide-block 12, as best shown in
Fig. 5.

The lower end of the shank *13^a* is forwardly
widened, and the front edge of this widened 130
portion is preferably sloped, as shown in Fig.
3, to allow said end of the key to move freely
through the key-slot *i'*, and it will be seen
that the length of the shank portion of the

key 13 is so proportioned as to permit the widened part *n* of the shank to occupy the slot *i'* in the lower wall of the draw-head when the key is completely elevated for release of the knuckle, the widened part *n* serving to prevent a forward tipping of the key when in elevated position.

Preferably there is a transverse perforation formed in the lower end of the key 13 for the reception of a cross-pin *o*, that is introduced after the key is in position, and said pin serves to prevent a removal of the key, checking it when it is upwardly slid far enough to release the knuckle.

It will be evident that when the key 13 is raised so as to remove the wing *m* from the block 12 the latter can be freely moved outward, as the shank 13^a will traverse the vertical slot *g* from front to rear of said slot, and if the block 12 is moved more or less outward the lower end of the wing *m* may be seated on the top of the block at the side of the slot *g*, and in this manner the key will be retained in an elevated adjustment until the block is again slid rearward, so as to enter the wing *m* within the notch *h*.

When the improved coupling is arranged on a car, it is essential that the key 13 have a flexible connection with the usual rock-shaft held on the end of the car and extended to the sides of the car-body, so that the key may be elevated thereby for the release of the knuckle, and as this is not a portion of the invention it is omitted from the drawings.

In operation, assuming that two cars having the improved couplings are made to approach on the same railroad-track, and that both couplings have their knuckles swung open, the jaws 11^a of the knuckles will first impinge, and then the ends of the slide-blocks 12 will contact with each other, resulting in the coupled connection of the car-couplings, as shown in Fig. 2.

It is evident that should one knuckle of two approaching couplings be closed and the other knuckle open the jaw 11^a of the closed coupling will impinge the end of the advanced slide-block in the other coupling and push it into the draw-head, resulting in the dropping of the key 13, that has been previously in an elevated position, which will effect the coupling together of both jaws 11^a in an obvious manner.

It is claimed for this improvement that the formation of the integral pintle *b* and its rockable connection with the cylindrically-formed channel *c* in the knuckle 11 is a novel and very advantageous feature, as it is strong, easy to produce, affords a check to the rocking of the knuckle either in opening or closing it, and when closed prevents any possible displacement of the knuckle at its jointed connection with the draw-head. Furthermore, the provision of the longitudinally-

slidable block 12 for the support of the key 13 and the peculiar formation of the key and also the construction of the tailpiece 11^b on the knuckle, which adapts it to swing in the horizontal slot of the slide-block and push the latter out of the draw-head when the knuckle is swung open, are also novel and advantageous features of the invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a car-coupling, the combination with a draw-head, of a knuckle having a vertical channel formed in it to engage a pintle on one wall of the draw-head, the said knuckle having an outward opening of less width than the diameter of the pintle, the inner wall of said outward opening being adapted to engage the inner surface of the draw-head at the rear of the pintle, substantially as described.

2. In a car-coupling, the combination with a draw-head having a pintle formed on one of its side walls and a reduced or web portion between said wall and pintle, of a knuckle having a channel to engage the pintle, the said channel having an outward opening of less width than the diameter of the pintle, the inner wall of said outward opening being adapted to engage the inner surface of said reduced or web portion, substantially as described.

3. The combination with a chambered draw-head, and a knuckle hinged thereto and having a tailpiece, of a slide-block adapted to reciprocate in the draw-head, and having a horizontal and a vertical slot extending longitudinally therein, the tailpiece swinging in the horizontal slot and contacting with its front wall to push the block out of the draw-head when the knuckle is opened, and a locking-key for the knuckle, engaging the vertical slot in the sliding block, and adapted to be held elevated therein when the knuckle is open, and to fall to lock the knuckle when said knuckle is closed, substantially as described.

4. In a car-coupling of the construction described, the combination with a chambered draw-head, a knuckle hinged thereon, and a longitudinally-slotted slide-block movable in the draw-head, of a vertical locking-key working in perforations in the draw-head and through one of the slots in the slide-block, said key being adapted to lock the knuckle-tailpiece when the knuckle is closed and the slide-block is rearwardly moved in the draw-head, and also to release the knuckle and receive support from the slide-block when the key is lifted and the knuckle is opened, substantially as described.

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Witnesses:

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JOS. C. WENDEL.