

Sept. 2, 1958

E. H. BLATTNER

2,850,175

SELECTIVE TRAVEL DRAFT GEAR

Filed Sept. 28, 1953

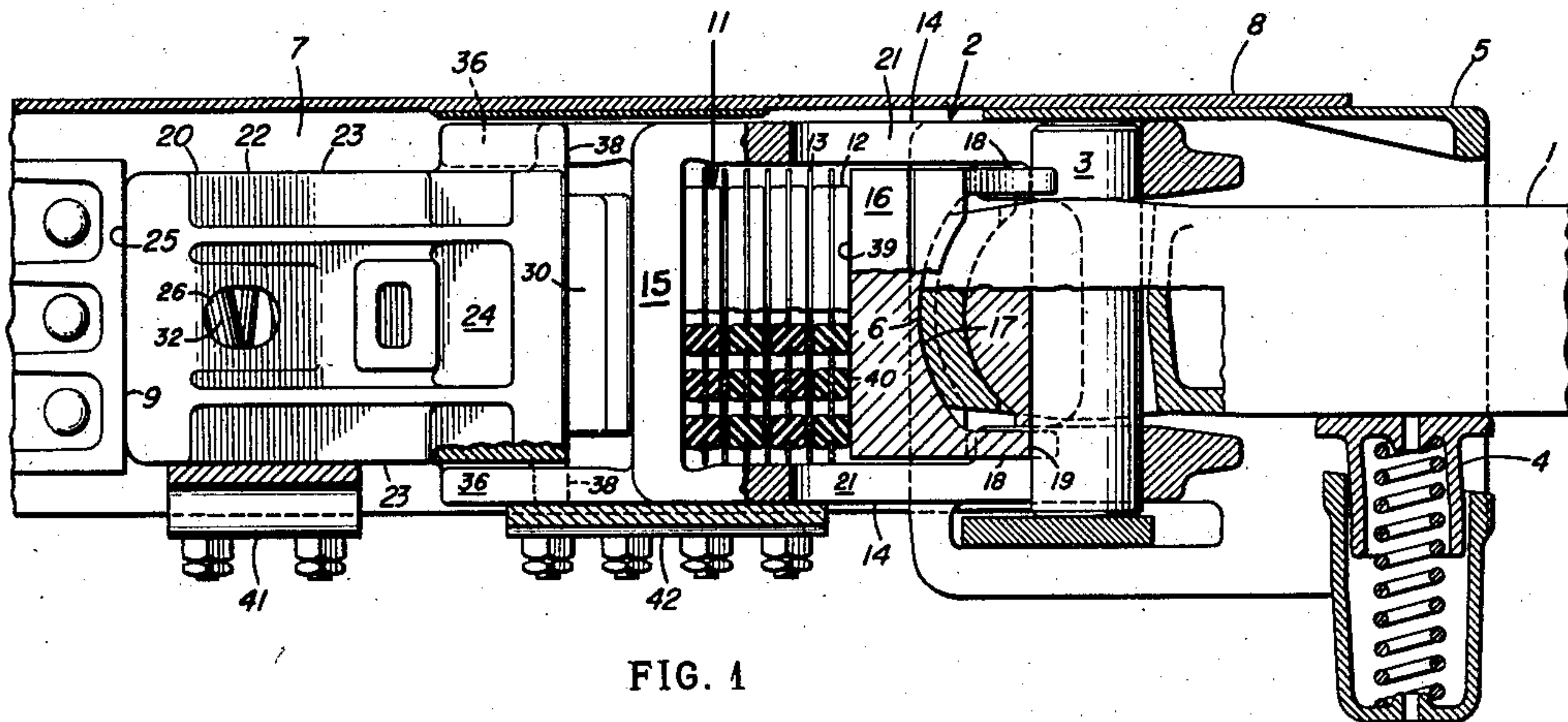


FIG. 1

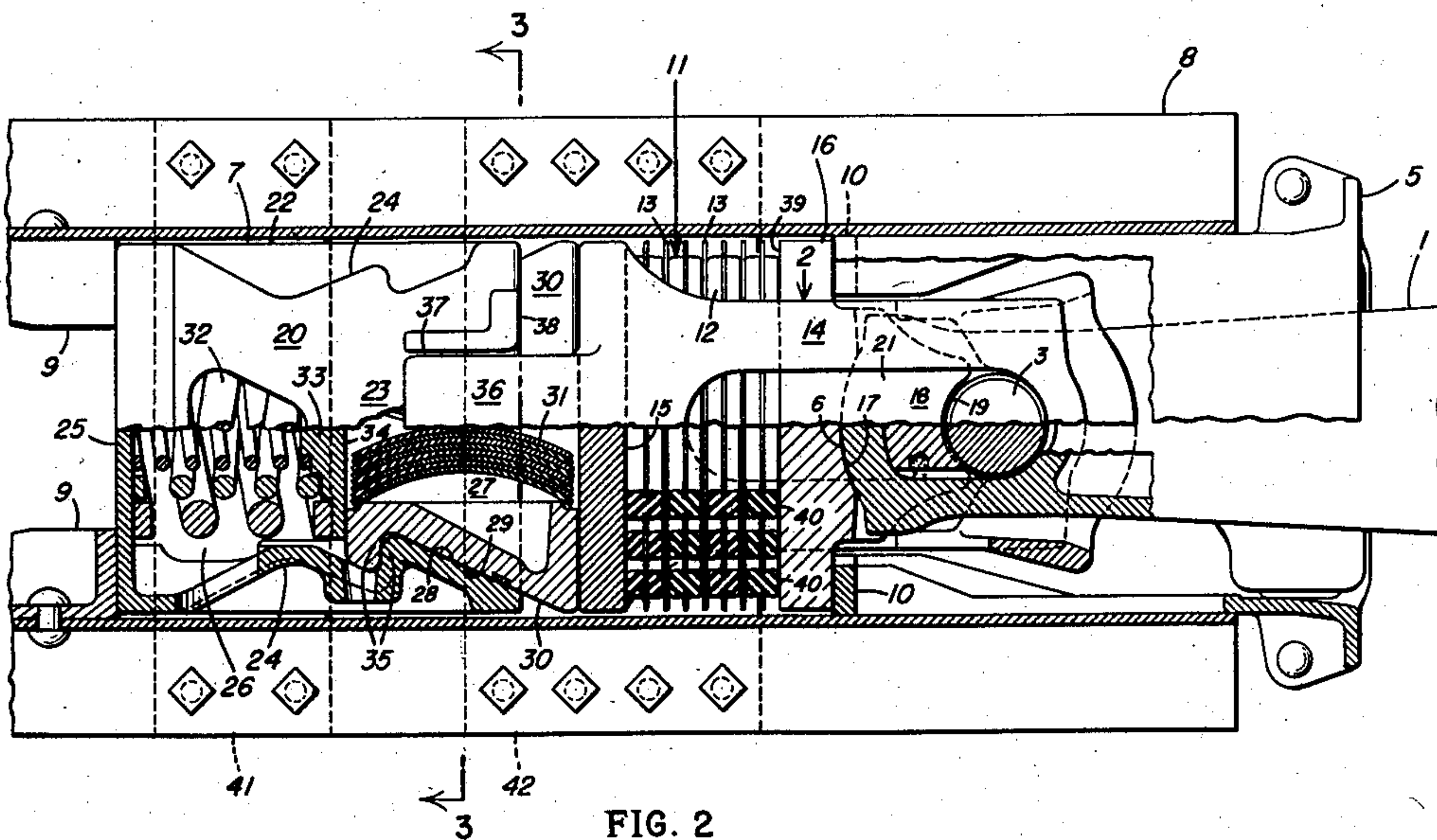


FIG. 2

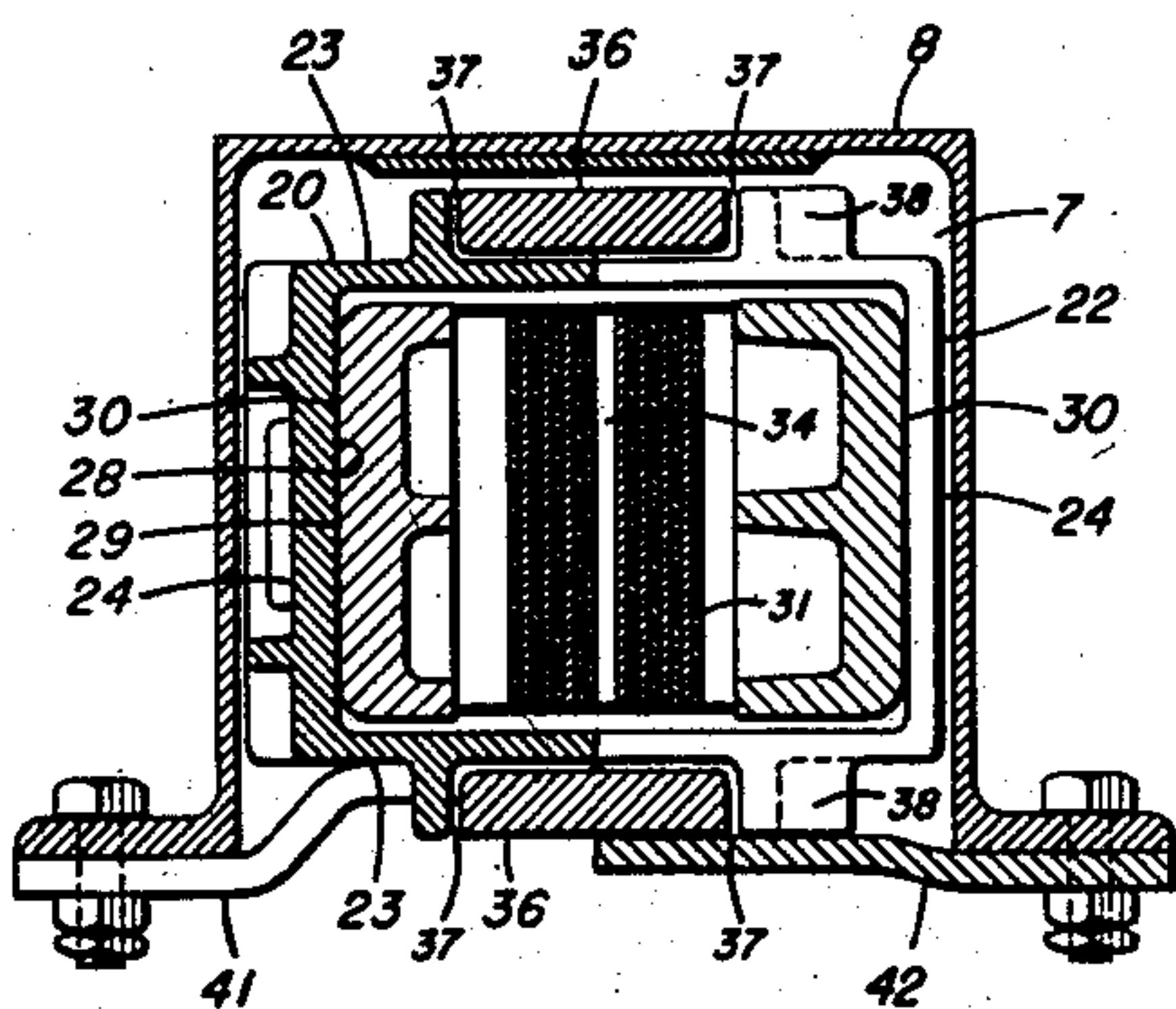


FIG. 3

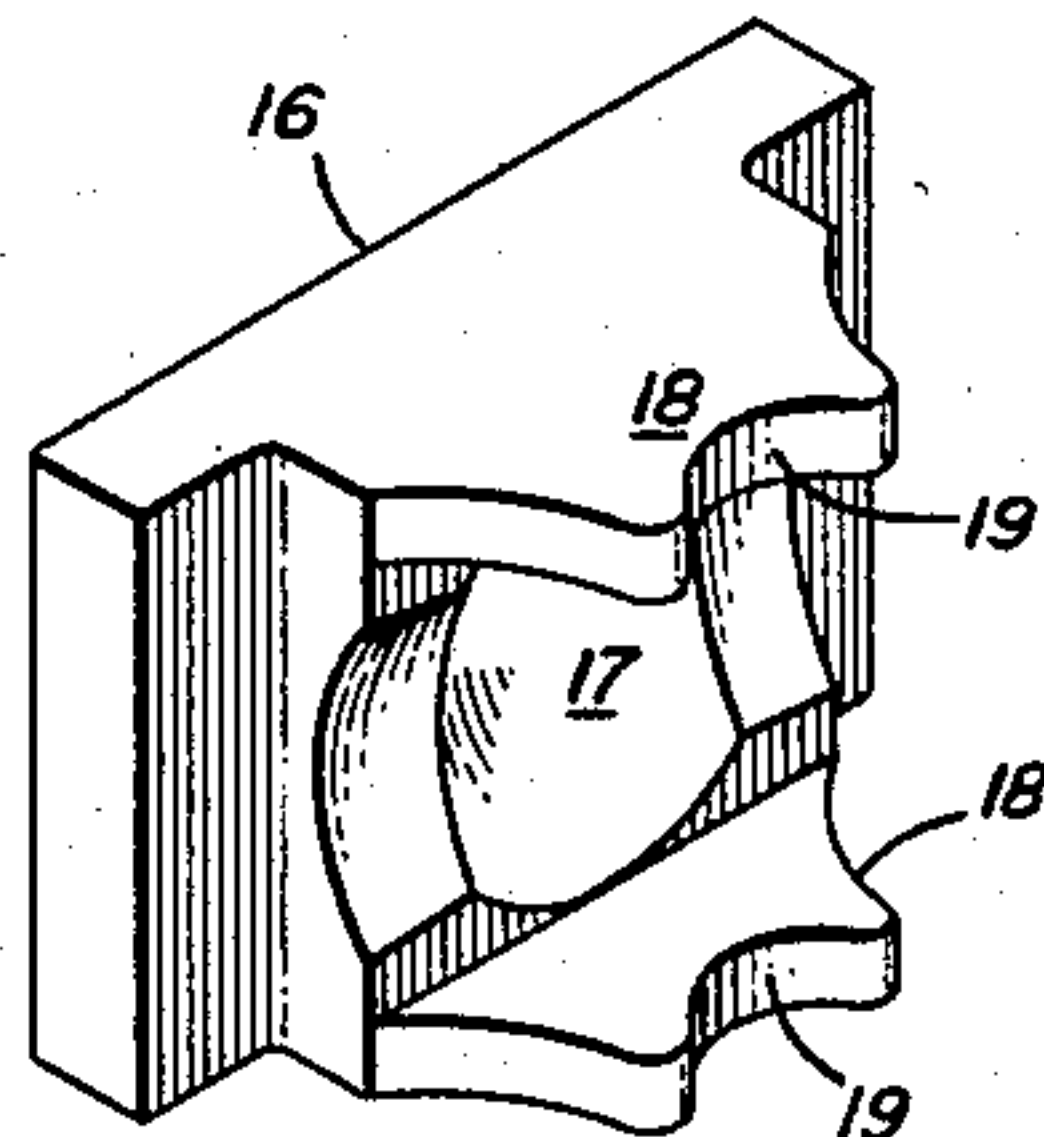


FIG. 4

Inventor:
Emil H. Blattner

By *Wilmer Mecklin*
his Attorney

1

2,850,175

SELECTIVE TRAVEL DRAFT GEAR

Emil H. Blattner, Williamsville, N. Y., assignor to The Symington-Gould Corporation, Depew, N. Y., a corporation of Maryland

Application September 28, 1953, Serial No. 382,606

14 Claims. (Cl. 213—45)

This invention relates generally to cushioning mechanisms and more particularly to selective travel draft gears for railway cars.

An object of the invention is to provide an improved selective travel draft gear in which rubber and friction cushioning units are combined and so arranged as to provide the draft gear with a "resilient solid point" under normal service forces.

Another object of the invention is to provide an improved selective travel draft gear of the type using a yoke straddling and limited in action in draft to a front cushioning unit wherein means are provided for centering the several force transmitting components in their movement longitudinally of the associated center sills.

An additional object of the invention is to provide an improved selective travel draft gear using in tandem rubber and friction cushioning units, wherein the housing of the friction unit serves to center the yoke containing the rubber unit during movement of the yoke under longitudinal forces.

A further object of the invention is to provide an improved selective travel draft gear adapted for use with a proposed A. A. R. type "F" coupler and to fit within a standard draft gear pocket, wherein rubber and friction cushioning units are used in tandem to afford adequate capacity and are so arranged as to avoid a rigid solid point under impacts ordinarily experienced in service.

A further object of the invention is to provide an improved selective travel draft gear combining rubber and friction cushioning units and designed for use with the proposed A. A. R. type "F" coupler, wherein the front follower engages and is centered by the coupler connecting pin in its longitudinal movement in buff.

Other objects and advantages of the invention will appear hereinafter in the detailed description, be particularly pointed out in the appended claims, and be illustrated in the accompanying drawings, in which:

Figure 1 is a view partly in side elevation and partly in vertical section of a preferred embodiment of the selective travel draft gear of the present invention.

Figure 2 is a view partly in plan and partly in horizontal section of the draft gear of Figure 1.

Figure 3 is a vertical sectional view taken along the lines 3—3 of Figure 2; and

Figure 4 is an isometric view of the front follower.

Referring now in detail to the drawings, in which like reference characters designate like parts, the improved draft gear of this invention is particularly designed for use with a proposed A. A. R. type "F" coupler such as shown in my copending application, Serial No. 380,545, filed September 16, 1953. The coupler, designated as 1, only the shank portion of which is here shown, is connected for universal movement in the usual manner to a yoke 2 of the draft gear of this invention by a connecting pin 3 and resiliently supported for vertical movement by a coupler carrier 4 carried by a striking casting 5, the coupler, to

2

facilitate universal movement, having on its butt a rearwardly directed spherically convex surface 6.

The draft gear is also particularly designed to fit in a standard draft gear pocket 7 between center sills 8 of a railway car (not shown), the pocket being defined longitudinally by rear stop lugs 9 and front stop or draft lugs 10 fixed to the center sills. The draft gear, itself, is comprised of a front rubber cushioning unit 11, preferably of the type shown in my above-named copending application and formed of rubber spring units 12 alternating with and spaced by divider plates 13. This front cushioning unit is straddled by and contained within the yoke 2 connected to the coupler 1, the yoke being a so-called vertical yoke and having a pair of forwardly extending vertically spaced legs 14 connected rearwardly by an integrally formed transversely directed plate or web 15 serving as the rear wall of the yoke and center follower of the draft gear. Longitudinally the front cushioning unit 11 is contained between and bears against the transverse plate 15 of the yoke and a front follower or follower block 16 which is adapted on either side to engage the front draft lugs 10 under draft forces. This front follower 16 has as its front face, intermediate its sides, a spherically concave face or surface 17 matable with the spherically convex surface 6 on the coupler butt.

Above and below the coupler and integral with the front follower 16 are a pair of forwardly extending vertically spaced ears 18 having in their forward ends vertically aligned cylindrical surfaces 19 concentric and engageable with the connecting pin 3 and engaging the pin in the normal or neutral position of the draft gear.

In draft, the yoke 2 and the coupler 1 move as one, requiring no special connection other than the connecting pin. However, in buff, rearward movement of the yoke is resisted by a rear cushioning unit 20 to be hereinafter described, and the coupler must move rearwardly relative to the yoke in order to compress the front or rubber cushioning unit 11. The required relative rearward longitudinal movement of coupler and yoke is obtained by elongated slots 21 formed in the forwardly extending legs 14 of the yoke 2 and slidably receiving the ends of the connecting pin 3.

The rear cushioning unit 20 of the draft gear is, as mentioned, a friction cushioning unit which serves two purposes in the assembly; one, to provide additional cushioning capacity coupled with high energy absorption, by virtue of its friction elements, and the other, to serve as a base for guiding the yoke 2 in its movements. With these two essentials satisfied, the particular form of the rear cushioning unit is a matter of choice. In the form illustrated the rear or friction cushioning unit 20 is of the type having a box shaped cast housing 22 and using friction elements in the housing for high energy absorption. The housing 22 of the friction unit 20 may be of the usual type, formed of upper and lower walls 23 connected longitudinally by side walls 24, the several longitudinal walls being connected at their rear ends by a transversely extending rear wall 25 through which the housing bears against the rear stop lugs 9. Contained within the several walls of the housing is a pocket 26 opening forwardly through a bell-mouth 27, the mouth being defined horizontally by confronting outwardly inclined or flaring wedging surfaces 28 formed on the side walls 24 of the housing. Frictionally engaging these wedging surfaces are wedging faces 29 of a pair of vertically spaced friction elements or wedges 30, the latter being urged apart horizontally by a pair of sets of semi-elliptic leaf springs 31. Inwardly of the wedges 30 within the pocket 26 are resilient means in the form of coil springs 32 which are separated from the wedges by a floating follower 33, the wedges frictionally engaging not

only the wedging surfaces 28 but the front face 34 of the floating follower 33 as the friction unit is compressed. The components of the friction unit are held in assembled relation by interlocking shoulders 35 provided for this purpose on the wedges 30 and housing 22.

When the draft gear is assembled, the wedges 30 bear against and are acted on by the transverse plate 15 of the yoke 2, this plate thus serving as a follower for the friction cushioning unit and a center follower for the draft gear. Were no other connection provided between the yoke and the friction unit than this frictional engagement, the yoke would tend to angle or cock relative to the center sills 8 and on excessive angling would gouge into the center sills and impair the operation of the draft gear. Such angling is avoided in the draft gear of the present invention by so connecting the yoke and friction unit that the latter serves as a guide and centers the yoke in its longitudinal movement. To this end, there are provided two vertically spaced substantially parallel rearwardly directed arms 36 fixed to and preferably integral with the yoke 2 and extending rearwardly of the transverse follower plate 15. In substantial alignment with the legs 14 of the yoke, the arms 36 overlap and straddle the housing 22 and specifically its upper and lower walls 23. These arms, each with its sides substantially parallel, are slidably received in guideways or channels 37, each of which may be defined by a pair of parallel-sided guides or abutments 38 integral with and outstanding vertically from the associated one of the upper and lower walls 23. With its arms 36 so guided by the guide channels 37 on the housing 22 and the overlap of the arms sufficient to accommodate its full range of movement relative to the housing 22, the yoke is guided and centered throughout its longitudinal movement in both buff and draft.

The same angling and gouging of which the yoke, if unguided, would be capable, could occur in buff between the front follower 16 and the yoke, were it not for the previously mentioned engagement between the follower and the connecting pin 3, provided by the ears 18. This connection prevents angling about a horizontal axis, but, since the engaging surfaces of the ears and pin are cylindrical, would not prevent angling about a vertical axis. The latter, however, is effectively prevented by the restraint imposed on the follower by the frictional contact of its rear face 39 with the confronting rubber pads 40 of the front of the spring units 12 of the front cushioning unit 11. It is, then, the engagement with the connecting pin which prevents the front follower from gouging into the legs 14 of the yoke 2 and the restraint imposed by the front cushioning unit by which gouging of the follower into the center sills is avoided.

Constructed in the above manner, the draft gear not only fits into a standard draft gear pocket, but does so with a minimum of alteration in the standard construction, requiring only the provision of two supporting cross-plates between the center sills 8, one 41 underlying the friction unit 20 and the other, 42, the yoke 2, and both fixed as by bolting to the center sills.

In operation, and first in buff, the force of impact is transmitted from the coupler 1, through the front follower 16, the front cushioning unit 11, the center follower 15 of the yoke 2 and the friction cushioning unit 20, to the rear stop lugs 9, the cushioning units thus both acting in buff and acting in series. In draft, the coupler, through the connecting pin 3, picks up the yoke 2, carrying it forward. The front follower 16, then engaging the front draft lugs 10, causes the rubber cushioning unit 16 to compress and yieldably resist the forward movement of the coupler. Since the yoke does not confine and is free to move forwardly relative to the rear cushioning unit 20, the latter is not affected but remains inactive until the draft gear is again subjected to buffing forces. Acting alone in draft and in series with the friction cushioning unit 20 in buff, the rubber cushioning

unit 11, since having no fixed solid point, provides the draft gear with what might be termed a "resilient" solid point which effectively prevents the draft gear from going solid under service impacts, a characteristic not found in conventional friction draft gears.

From the above detailed description it will be apparent that there has been provided an improved selective travel draft gear wherein rubber and friction cushioning units are combined and act in series and the force transmitting components are effectively centered and guided in their longitudinal movement. It should be understood that the described and disclosed embodiment is merely exemplary of the invention and that all modifications are intended to be included which do not depart either from the spirit of the invention or the scope of the appended claims.

Having described my invention, I claim:

1. A selective travel draft gear comprising front and rear cushioning units, a yoke containing said front unit and connected to an associated coupler by a connecting pin, a front follower within said yoke and engageable with said coupler and connecting pin, and guide means on said rear unit engageable with means on said yoke for guiding said yoke during longitudinal movement in either direction thereof.

2. A selective travel draft gear comprising a front rubber cushioning unit, a rear friction cushioning unit having a housing, a yoke containing said front unit and connected by a connecting pin to a coupler, a front follower within said yoke between said front cushioning unit and said coupler, said front follower having an intermediate surface engaging a butt of said coupler and a pair of forwardly projecting ears including said surface and rotatably engaging said connecting pin, guide means on said housing, and means on said yoke and engageable with said guide means for guiding said yoke during longitudinal movement thereof.

3. A draft gear comprising a yoke swivelly connected to a coupler by a connecting pin, a cushioning unit within said yoke, a front follower between said cushioning unit and coupler, and means on said follower and engageable with said pin for centering said follower relative to said yoke on longitudinal movement therebetween.

4. A draft gear comprising a yoke swivelly connected to a coupler by a connecting pin, a cushioning unit within said yoke, a front follower between said cushioning unit and coupler, and means on said follower and rotatably engaging said connecting pin for centering said follower relative to said yoke on longitudinal movement therebetween.

5. A draft gear comprising a yoke swivelly connected to a coupler by a connecting pin, a cushioning unit within said yoke, a front follower between said cushioning unit and coupler, and vertically spaced ears projecting forwardly of said front follower and rotatably engageable with said pin on opposite sides of said coupler for centering said follower relative to said yoke on longitudinal movement therebetween.

6. A draft gear fittable between center sills and comprising a yoke, a cushioning unit within said yoke, and means associated with said center sills and slidably engageable with said yoke for guiding said yoke between said center sills on relative longitudinal movement thereof in either direction.

7. A draft gear fittable between center sills and comprising a yoke swivelly connected to a coupler by a connecting pin, a cushioning unit within said yoke, a front follower in said yoke and between said cushioning unit and coupler, spaced means on said front follower and straddling said coupler, said means rotatably engaging said connecting pin for guiding said follower relative to said yoke on longitudinal movement therebetween, and means associated with said center sills and slidably engageable with said yoke for guiding said yoke between said center sills on longitudinal movement therebetween.

5

8. A draft gear comprising front and rear cushioning units, a yoke containing said front unit and swivelly connected to a coupler by a connecting pin, a follower in said yoke and between said unit and coupler, spaced means on said follower straddling said coupler and rotatably engageable with said connecting pin for guiding said follower on longitudinal movement thereof relative to said yoke, and means connected to said rear unit and slidably engageable with said yoke for guiding said yoke on longitudinal movement thereof.

9. A selective travel draft gear comprising rubber and friction cushioning units arranged in tandem between center sills and acting in series, a yoke including one of said units and transmitting buffing forces therefrom to said other unit, said yoke being swivelly connected to a coupler, a front follower in said yoke and between said one unit and coupler, and means for guiding said follower relative to said yoke and said yoke relative to said other cushioning unit on longitudinal movement therebetween.

10. A selective travel draft gear comprising rubber and friction cushioning units arranged in tandem between center sills and acting in series, a yoke including one of said units and transmitting buffing forces therefrom to said other unit, said yoke being swivelly connected to a coupler by a connecting pin, a front follower in said yoke and between said one unit and coupler, spaced means on said front follower and rotatably engageable with said connecting pin on opposite sides of said coupler for guiding said follower relative to said yoke on longitudinal movement therebetween, and means connected to said other cushioning unit and slidably engageable with said yoke for guiding said yoke between said center sills on longitudinal movement thereof.

11. A selective travel draft gear comprising a front rubber cushioning unit and a rear friction cushioning unit arranged in tandem between center sills, a yoke straddling and including said front unit and acting against said rear unit, said yoke being connected to a coupler, and a front follower mounted in said yoke between said front cushioning unit and coupler and engaging and guided by said coupler in buff, said front follower in buff transmitting forces to said front cushioning unit and through said yoke to said rear cushioning unit and in draft acting only on said front cushioning unit.

12. A selective travel draft gear comprising a front rubber cushioning unit, a rear friction cushioning unit

6

having a housing, a yoke swivelly connected to a coupler and including said front unit, spaced rearwardly extending means on said yoke straddling said housing, and means on said housing and slidably receiving said spaced means for guiding said yoke on longitudinal movement thereof in either direction relative to said housing.

13. A selective travel draft gear comprising a front cushioning unit, a rear friction cushioning unit having a housing, a yoke having a transverse portion interposed between said units and spaced forwardly extending legs elongatedly slotted for receiving a connecting pin swivelly connecting said yoke to a coupler, a front follower in said yoke between said front cushioning unit and coupler, spaced forwardly extending ears on said front follower included by said yoke legs and each rotatably engaging said connecting pin on opposite sides of said coupler for guiding said follower relative to said yoke on longitudinal movement therebetween, spaced arms on and extending rearwardly of said transverse portion of said yoke and straddling said housing, and guideways on said housing and each slidably receiving one of said arms for guiding said yoke on longitudinal movement thereof.

14. A selective travel draft gear comprising a front cushioning unit, a rear friction cushioning unit having a housing, a yoke having a transverse portion interposed between said units and vertically spaced forwardly extending legs elongatedly slotted for receiving a connecting pin swivelly connecting said yoke to a coupler, a front follower in said yoke between said front cushioning unit and coupler, forwardly spaced ears on said front follower included by said yoke legs and each rotatably engaging said connecting pin on opposite sides of said coupler for guiding said follower relative to said yoke on longitudinal movement therebetween, vertically spaced arms on said yoke and straddling said housing, and guideways on said housing and each slidably receiving one of said arms for guiding said yoke on longitudinal movement thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

629,497	Ewart	July 25, 1899
1,589,388	Haseltine	June 22, 1926
1,866,619	Barrows	July 12, 1932
2,540,041	Blattner	Jan. 30, 1951
2,645,361	Wolfe	July 14, 1953
2,650,721	Bourdon	Sept. 1, 1953