Sept. 20, 1960 V. S. DANIELSON 2,953,260

FRICTION SHOCK ABSORBING MECHANISMS

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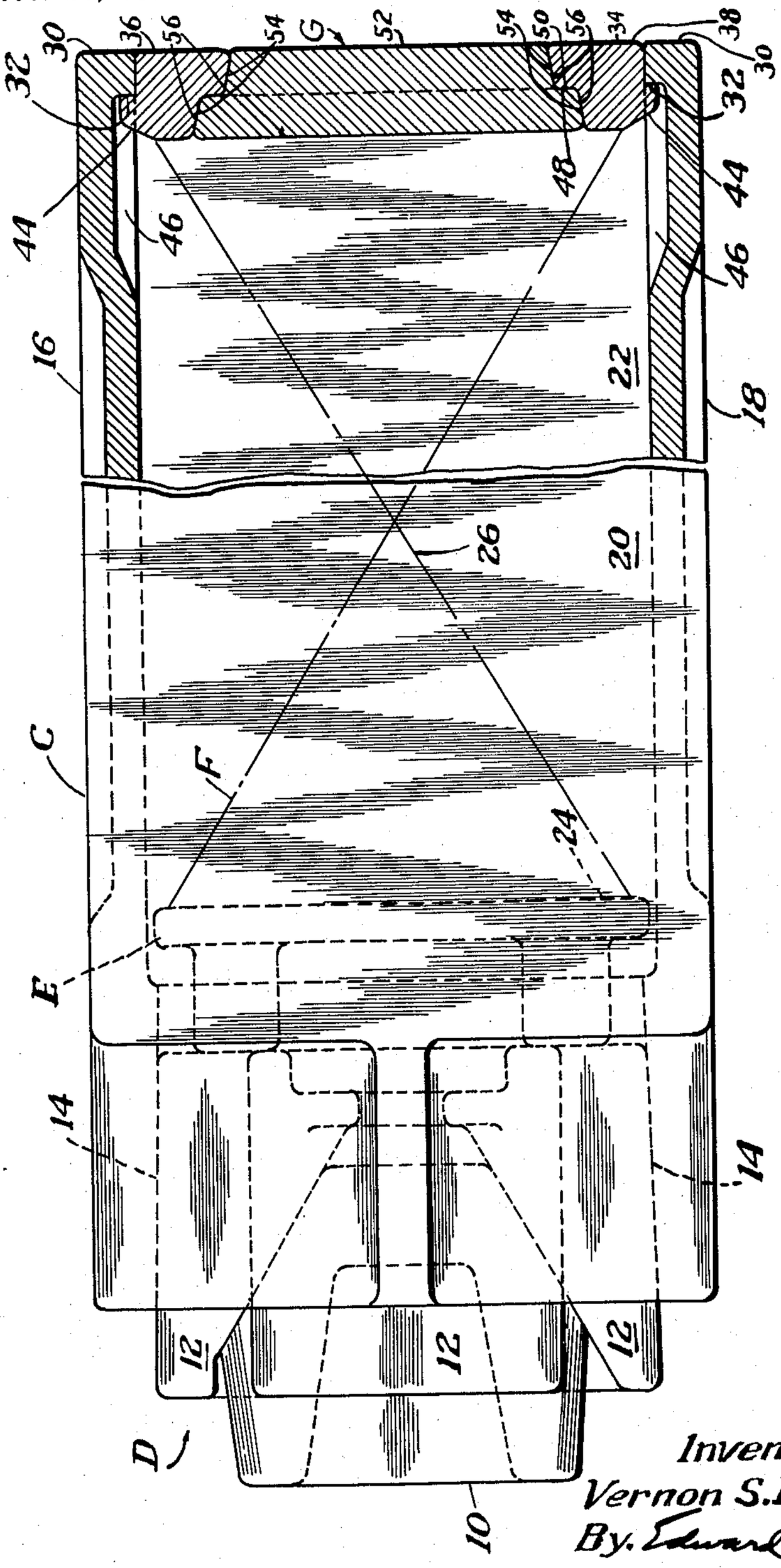

Fig. 1

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Fig 2

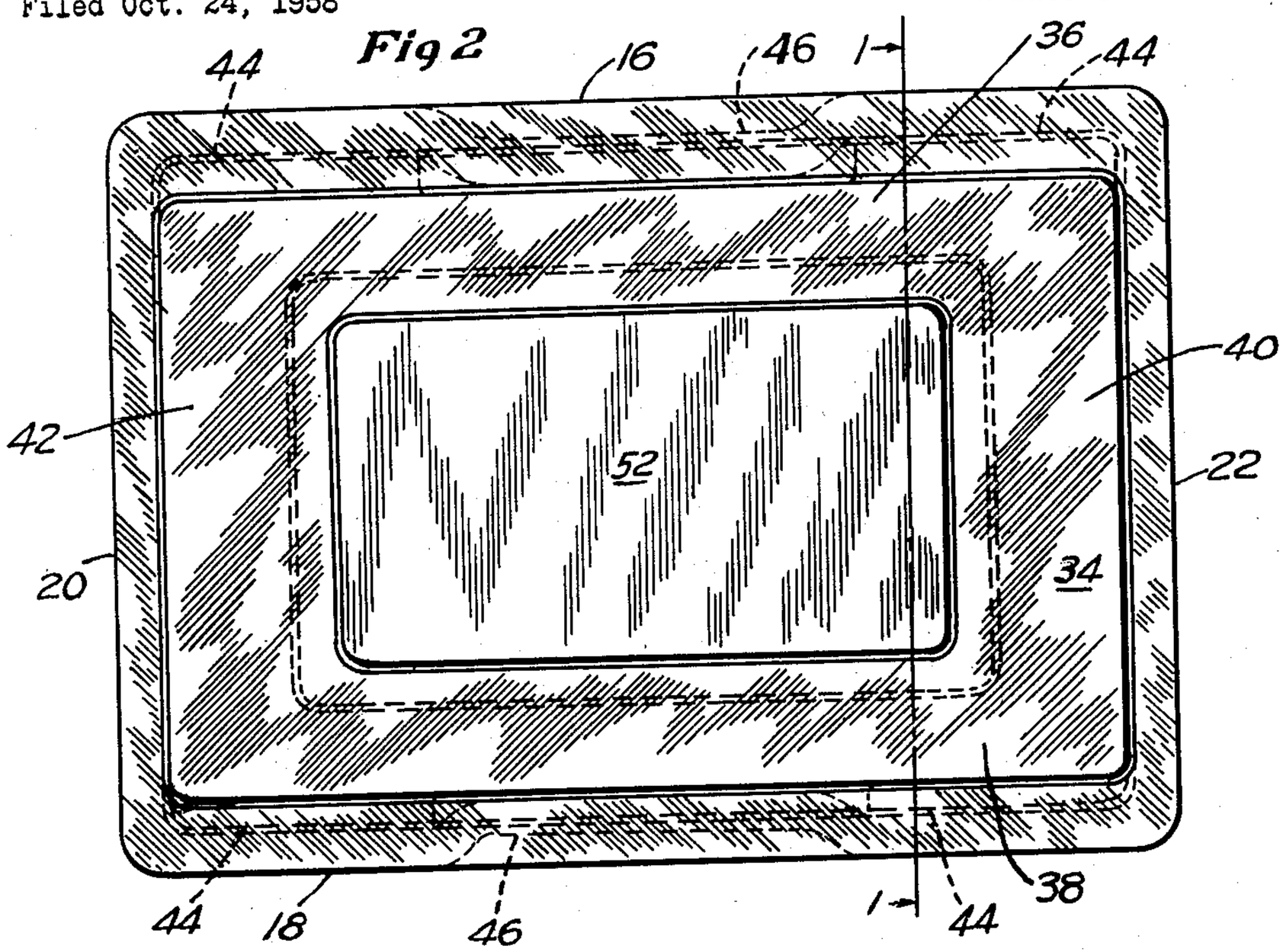
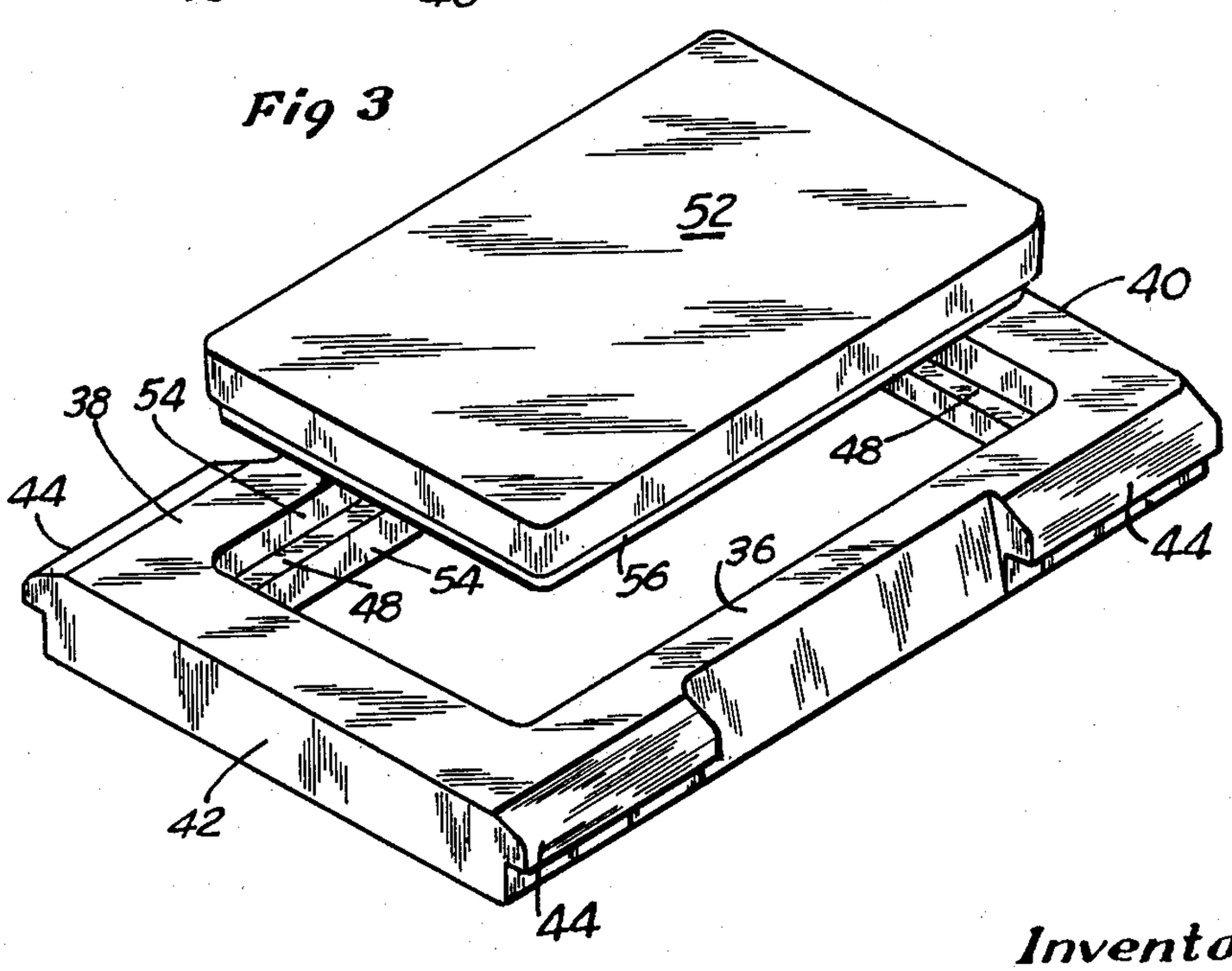


Fig 3



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FRICTION SHOCK ABSORBING MECHANISMS

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This invention relates to improvements in friction shock absorbing mechanisms, and particularly to mechanisms of this character adapted for use as draft gears for railway cars.

Unitary draft gears comprising a casing having a restricted front opening necessitating assembly of components from the rear thereof and employing a removable rear wall for closing the open rear end of such casing are known in the art.

The draft gear construction of the present invention overcomes disadvantages inherent in prior art constructions by attaining a high-strength rear closure construction while permitting ease of assembly and disassembly of the rear wall.

It is an object of the invention to provide a two-piece rear wall which, when assembled with a casing, will be rigid and virtually of one-piece construction.

It is a further object of this invention to provide a flanged casing with a ring fitting interiorly of the casing and having lugs in abutting engagement with the casing flanges, and to provide a filler block having tapered surfaces fitting against complementary tapered surfaces on the interior of the ring whereby outward movement of the ring and filler block will be prevented while permitting inward movement of the filler block when it is desired to disassemble the rear wall closure from the casing.

In the accompanying drawings, Figure 1 illustrates a complete draft gear with the rear portion broken away along section line **1—1** of Figure 2 to more clearly illustrate a filler member and rectangular locking ring;

Figure 2 is a rear view of the draft gear of Figure 1 and showing the filler member, locking ring and rear edge of the casing; and

Figure 3 is an exploded isometric view of the filler member and locking ring according to the invention.

As illustrated in Figures 1, 2, and 3 of the drawings, the shock absorbing mechanism of this invention generally comprises an outer cylinder or shell C, a friction clutch D, consisting of a wedge and three shoes retained by interengaging lugs (not shown) in the open end of the cylinder C, a forward spring follower E, resilient means F, and a two-piece rear wall G.

Referring now in detail to Figure 1, the front end of the mechanism includes a wedge **10** in frictional engagement with a plurality of friction shoes **12** which are in sliding friction-producing engagement with the interior surfaces **14** of the cylinder C which in this vicinity is of hexagonal configuration. The surfaces **14** are inwardly tapered to promote increased frictional resistance to inward movement of the shoes **12** and wedge **10**.

At, or slightly to the rear of, the termination of the tapered surfaces **14**, the hexagon configuration of the cylinder C merges into a rectangular structure comprising integral top and bottom walls **16** and **18**, and side walls **20, 22**. The rectangular casing thus formed by the walls **16, 18, 20** and **22** houses a front spring follower

24 and a resilient means **26**, preferably a stack of metal-faced rubber pads, in abutment with such follower **24**, and engaging the rear wall G. The top and bottom walls **16** and **18** terminate in short, inwardly turned, centrally interrupted flanges **30** which have inner surfaces **32** forming shoulders limiting rearward movement of ring **34**.

The ring **34** comprises integral top and bottom sections **36** and **38**, and side sections **40** and **42**, arranged rectangularly as most clearly shown in Figure 3. Each of the top and bottom sections **36** and **38** are preferably provided with a pair of stop lugs **44** spaced from each other and adjacent to the side sections **40** and **42**, respectively. In this fashion the space between each pair of lugs **44** will accommodate an inwardly extending rib **46** centrally located in the top and bottom walls **16** and **18** in proximity to the rear edge of the casing when the lugs **44** are in shouldered engagement with the flanges **30**. The ribs **46** thus reinforce and impart additional structural strength to the rear end of the casing.

The ring **34** is provided with a shoulder **48** extending continuously around the entire interior thereof and engageable with a complementary continuous shoulder **50** provided along the periphery of filler block **52**. In addition to the abutment attained by engagement of the shoulders **48** and **50**, one with the other, the ring **34** and filler block **52** have complementary tapered surfaces **54** and **56** engageable with each other.

From Figure 1 it will be appreciated that when the resilient means **26** is constituted by a stack of pre-stressed metal-faced rubber pads, the rearmost pad will be in direct bearing engagement against both the ring **34** and the filler block **52** and the lugs **44** will be maintained in tight engagement with the flanges **30**. Likewise, the tapered seats of surfaces **56** and the shoulders **50** of the block **52** will be in tight engagement with the complementary portions of the ring **34**. Although not shown in the drawings, it may be preferred to have the flanges, lugs, shoulders and tapers so proportioned that the pressure exerted by the resilient means **26** is applied primarily to the filler member **52**, and thus ensure a tight and rigid construction. This is readily accomplished when a stack of rubber pads is used as the resilient means by increasing the thickness of the block **52** to project inwardly slightly beyond the inner surface of the ring **34**.

To assemble the mechanism, the cylinder or housing C is placed in an upended position with the rectangular end uppermost, the wedge **10** is then inserted within the cylinder to partially extend through the open mouth of the hexagonal end. Shoes **12**, three in number, are next inserted and placed in position engaging the wedging surfaces of the wedge **10** and contacting the tapered friction surfaces **14** of the cylinder. The front follower E is placed in the same manner to contact the rear surfaces of the shoes **12**. The resilient means F is then placed within the housing C. At this point in the assembly the resilient means F will project beyond the open rear end of the housing C due to its extra length which provides initial compression when the device is completely assembled. The filler plug **52** is then placed on top of the resilient means F. A suitable tool, or plunger (not shown) is placed through the rectangular ring **34** and positioned against the outer face filler block **52**. The necessary pressure is then applied to the tool to compress the resilient means a sufficient distance to allow the rectangular ring **34** to be canted for passage through the rear opening of the casing and into the interior thereof. Pressure is then gradually relieved until the plug **52** seats itself within the ring **34** which will then be permitted to engage the flanges **30** by means of its lugs **44**.

From the foregoing description, it will be observed

that this invention provides a readily assembled or disassembled rear wall with a large unobstructed opening for assembly of the internal parts, and thus permits utilization of maximum interior space for the provision of the maximum size of resilient means whether it be a spring or rubber pads of well-known design. Since certain changes can be made in the foregoing construction and different embodiments of the invention can be made without departing from the spirit and scope thereof, it is intended that all matter shown in the accompanying drawings described hereinbefore shall be interpreted as illustrative and not in a limited sense.

I claim:

1. A shock absorbing mechanism comprising the combination of a casing having one end of rectangular configuration, force transmitting means within and projecting from the other end of the casing, resilient means within said casing, flanges on the rectangular end of the casing extending inwardly from opposed walls thereof, a rectangular ring member nested within the casing, outwardly extending flanges on two opposed sections of said ring and in abutting engagement with said casing flanges, a continuous shoulder on the interior of said ring facing inwardly of the casing, two continuous tapered surfaces interiorly of said ring, each of said tapered surfaces merging into said shoulder, a filler block nested within said ring, a continuous shoulder on said block facing outwardly and engageable with the ring shoulder, and tapered surfaces along either side of said block shoulder complementary to and engageable with the tapered surfaces on said ring, the tapered surfaces extending convergently toward the longitudinal center line outwardly of the casing.

2. A shock absorbing mechanism comprising a casing having a rectangular configuration at one end thereof, a pair of laterally spaced flanges extending inwardly at said end from each of two opposed walls of the casing, an inwardly projecting centrally located rib on each of

said two opposed walls of the casing, force transmitting means within and operable at the other end of the casing, resilient means within the casing and engageable by said force transmitting means, a rectangular ring within said casing, a pair of outwardly extending spaced flanges on two opposed sections of said ring and in abutting engagement with said casing flanges, a continuous shoulder on the interior of said ring facing inwardly of the casing, two continuous tapered surfaces interiorly of said ring, each of said tapered surfaces merging into said shoulder, a filler block nested within said ring, a continuous shoulder on said block facing outwardly and engageable with the ring shoulder, and tapered surfaces along either side of said block shoulder complementary to and engageable with the tapered surfaces on said ring, the tapered surfaces extending convergently toward the longitudinal center line outwardly of the casing.

3. An end closure for an open-ended casing having flanges extending laterally inwardly thereof, comprising a ring member having outwardly extending flanges engageable in abutting relation with said casing flanges, a continuous shoulder on the interior of said ring facing inwardly of the casing, two continuous tapered surfaces also on the interior of said ring and flanking said shoulder, a filled block nested within said ring, a continuous shoulder on said block facing outwardly and engageable with the ring shoulder, and tapered surfaces along either side of said block shoulder complementary to and engageable with the tapered surfaces on said ring, the tapered surfaces extending convergently toward the longitudinal center line outwardly of the casing.

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