March 30, 1965 W. M. FELTS 3,175,708

SUPPORT FOR HYDRAULIC CYLINDER

Filed Jan. 10, 1963 2 Sheets-Sheet 1

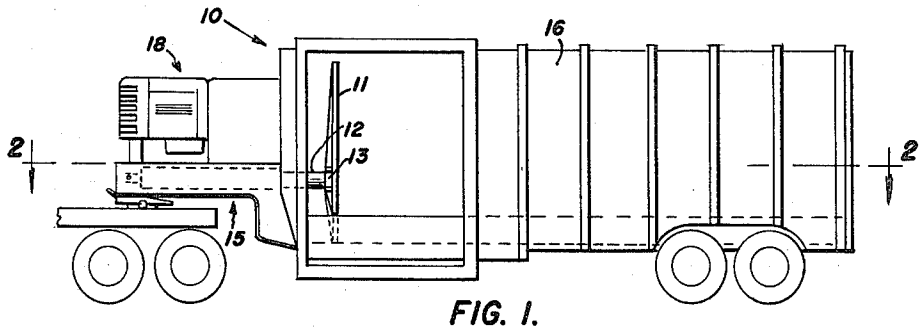


FIG. 1.

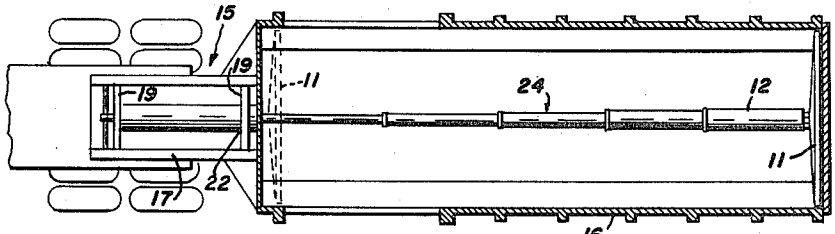


FIG. 2.

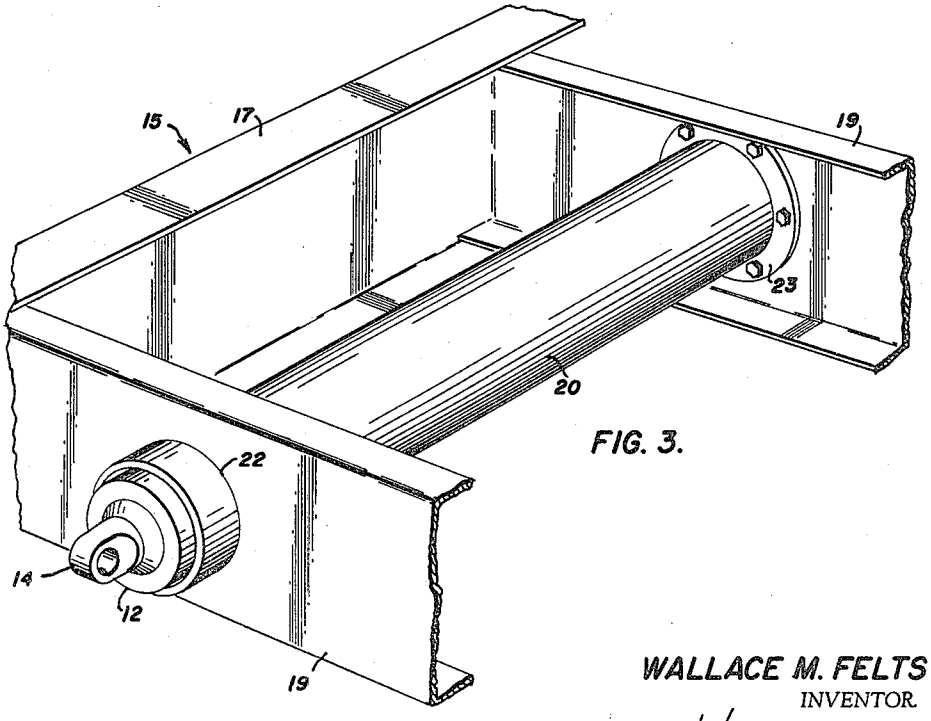


FIG. 3.

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SUPPORT FOR HYDRAULIC CYLINDER

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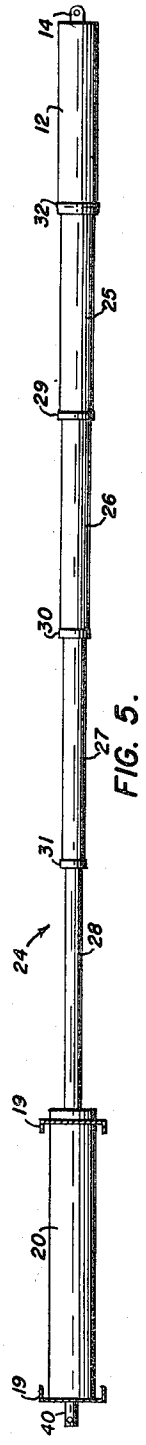


FIG. 5.

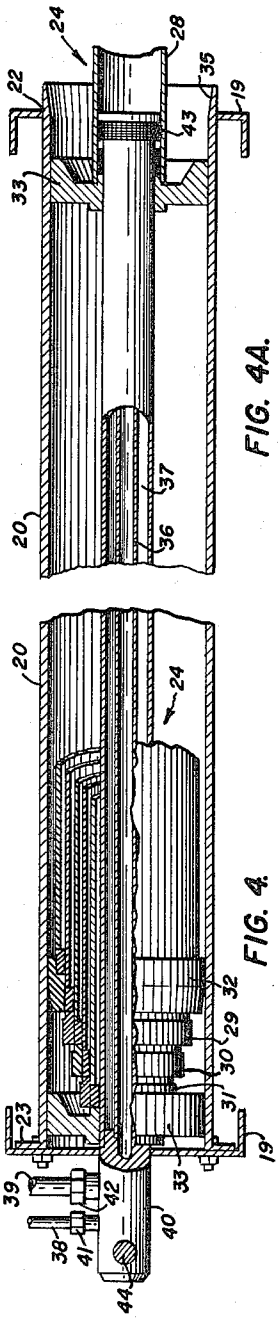


FIG. 4A.

FIG. 4.

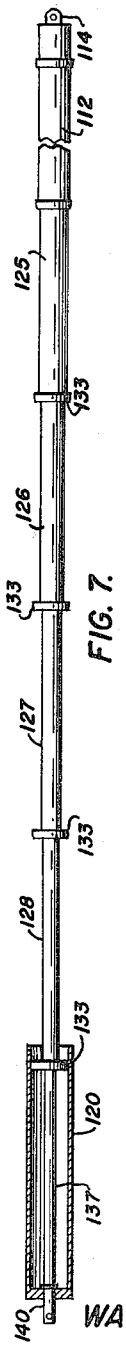


FIG. 7.

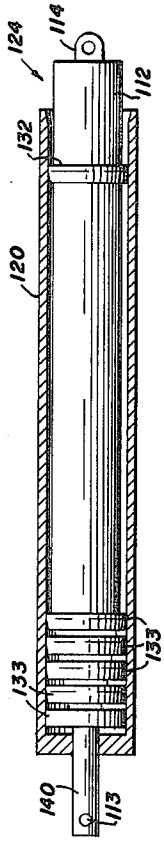


FIG. 6.

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SUPPORT FOR HYDRAULIC CYLINDER

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Filed Jan. 10, 1963, Ser. No. 250,620
5 Claims. (Cl. 214—82)

This invention relates to multiple section hydraulic cylinders and has reference to supports therefor. The invention is particularly adaptable for use in garbage truck or trailer bodies wherein packer blades are moved along the length of the bodies to compress collected refuse in one end thereof and whereby maximum loads may be obtained. The width and height of such bodies are limited by state or other governmental regulations, with the result that some bodies are frequently made as long as practical in order to increase load capacity. Longer bodies require longer multiple section hydraulic cylinders, but it has been found that such longer cylinders tend to sag when extended and bend during the compacting operation.

An object of the invention is to provide a support for a multiple stage hydraulic cylinder when in an extended position to reduce sagging and buckling.

Another object is to provide a support for the described purpose which is a simplified and economical construction.

A further object is to provide a support for a multiple section hydraulic cylinder and which support may be installed in the relatively narrow gooseneck of a large trailer.

These and other objects of the invention will become apparent from the following description and the accompanying drawings, wherein:

FIGURE 1 is a side elevational view of a trailer having a packer blade operated by a multiple section hydraulic cylinder mounted in the goose neck.

FIGURE 2 is a plan sectional view taken on line 2—2 of FIGURE 1.

FIGURE 3 is an enlarged fragmentary perspective view of a preferred form of the invention.

FIGURE 4 is a fragmentary longitudinal vertical sectional view of the forward end of the support illustrated in FIGURE 3 and showing the cylinder in its retracted position.

FIGURE 4A is a view similar to FIGURE 4, but showing the rear end of the support and illustrating the cylinder in its extended position.

FIGURE 5 is a reduced scale side elevational view of the preferred form of the invention in its fully extended position.

FIGURE 6 is a longitudinal section and side elevational view of a modified form of the invention, and

FIGURE 7 is a reduced scale view of the invention illustrated in FIGURE 6, but showing the same in its fully extended position.

In the drawings, the numeral **10** generally designates a trailer having a pusher blade **11** mounted on the large end **12** of a multiple section hydraulic cylinder, hereinafter referred to, by means of a transverse pin **13** which extends through an integral fitting, not numbered, on the rear surface of the blade and a corresponding fitting **14** on the cylinder.

The goose neck **15** of the trailer **10** is substantially narrower than the trailer body **16** and the sides include longitudinal parallel horizontal I beams **17** on which a prime mover and hydraulic pump assembly **18** is mounted. Spaced cross members **19** of channel stock extend between the I beams **17** and a longitudinal cylindrical support **20** is mounted in an opening **22** in

the rearward beam. The support **20** shown is in the form of a tube and the end opposite the opening **22** has a flange **23** therearound for attaching the support to the forward cross member **19**.

The multiple section hydraulic cylinder **24**, in addition to the referred-to large section **12**, includes additional telescoping sections **25**, **26**, **27** and **28** of successively reduced diameters, and the intermediate sections **25**, **26** and **27** have shoulders **29**, **30** and **31**, respectively, around exposed ends. Bearing rings **32** and **33** are mounted around the largest and smallest sections **12** and **28** on the ends thereof corresponding with shoulders **29–31** and which bearing rings make sliding contact with the inner surface of the support **20**. As shown in FIGURE 4A where the cylinder **24** is fully extended, the forward or inner bearing ring **33** does not extend beyond the support rear opening where the latter is beveled, as at **35**, for conveniently installing the cylinder assembly.

The cylinder **24**, except the support **20** and bearing rings **32** and **33**, is conventional and includes stationary hydraulic tubes **36** and **37**, one within the other along the longitudinal axis of the cylinder for extending and retracting the latter. Since the operation of multiple section cylinders is well known to the art, such operation is not herein described in detail; however, as shown in FIGURE 4, there are two hydraulic lines **38** and **39** connected with an axially aligned cylindrical head **40** which, in turn, is connected (not shown) with the interiors of the stationary tubes **36** and **37**. The head **40** is mounted in the forward cross member **19** and extends forwardly therefrom where the lines **38** and **39** are connected by fittings **41** and **42**. The tubes **36** and **37** extend to the beveled surface **35** of the support **20** where the outer tube **37** is provided with a seal **43** which contacts the inner surface of the smallest cylinder section **28**. As shown in both FIGURES 4 and 4A, the inner circumference of the forward bearing ring **33** is in sliding contact with the outer surface of the outer stationary tube **37**. A transverse pin **44** extends through the head **40** and connects with the I beams **17** or other suitable stationary mounting, not shown.

The form of the invention schematically shown in FIGURES 6 and 7 includes an elongate support in the form of a tube **120** having an open end through which the multiple section cylinder **124** extends when in operation. The largest cylinder section **112** has a bearing ring **132** near its rearward or outwardly extending end, but in contact with the inner surface of the support **120** when the cylinder is retracted. The inner or forward ends of the other cylinder sections, **125**, **126**, **127** and **128**, have bearing rings **133** therearound which are also in sliding contact with the inner surface of the support **120**. Only the outer stationary central tube **137** is shown and the head **140** is illustrated without fittings since, as explained in connection with the herein first described form of the invention, the operation of multiple section hydraulic cylinders is well kown to the art. The extending end of the head **140** has a transverse opening **113** for receiving a pin such as **44** described in the foregoing, and the outer end of the large section **112** has a fitting **114** for connecting the cylinder **124** with a pusher blade, such as **11**. It is to be noted that in this form of the invention the support **120** is not rigidly mounted, such as by cross members **19**.

In operation, the cylinder **24** or **124** is extended and retracted in the usual manner and in either construction the inner bearing ring **33** or **133** serves as a support to prevent the cylinder from sagging and bucking. In the first described form of the invention, the rigidly mounted support **20** further lends to such support, and in the second form of the invention the multiple bearing rings

133 successively lend lateral support just prior to leaving the support 120.

The invention is not limited to the exemplary constructions herein shown and described, but may be used in various ways within the scope of the appended claims.

What is claimed is:

1. Support means including a tubular open end elongate support member receiving a telescoping cylinder, the length of said support being substantially equal to the length of said telescoping cylinder in its retracted position, and wherein the largest section of said cylinder is the first section to extend from the open end of said support,

a stationary guide located along the axial center of said support member and slidably supporting the smallest moveable section of said telescoping cylinder, and

a bearing member mounted on said smallest moveable section of said cylinder and in sliding contact with said elongate support member.

2. Support means for a telescoping cylinder as defined in claim 1, and including:

means rigidly supporting said elongate support member.

3. Support means for a telescoping cylinder as defined in claim 1, and wherein:

the cylinder sections in addition to said smallest moveable section each includes a bearing member mounted thereon and in sliding contact with said elongate support member when received therein.

4. In combination with a vehicle body having a transverse pusher blade therein,

an elongate tubular support member having an open end directed toward the width of said pusher blade,

a telescoping cylinder received within said support member and arranged whereby the largest section of said cylinder is the first section to extend from the open end of said support member,

means connecting the extending end of said largest section of said cylinder with said pusher blade,

a stationary guide located along the axial center of said support member and slidably supporting the smallest moveable section of said telescoping cylinder, and

a bearing member mounted on said smallest moveable section of said cylinder and in sliding contact with said elongate support member.

5. The combination defined in claim 4, and wherein:

said vehicle body is a trailer having a goose neck at the forward end thereof, and

means rigidly mounting said support member within said goose neck,

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