United States Patent [19]

Rickettson

[11] **3,788,253**

[45] **Jan. 29, 1974**

[54] **FLEXIBLE BEARER**

[76] Inventor: **Donald F. Rickettson,** Shepherd Hill Rd., East Aurora, N.Y. 14052

[22] Filed: **Apr. 3, 1972**

[21] Appl. No.: **240,364**

[52] **U.S. Cl.**..... **112/402,** 61/38, 112/417, 161/50, 161/57, 161/60, 161/78, 161/86, 161/149

[51] **Int. Cl.**..... **D05b 93/00,** B32b 5/04

[58] **Field of Search**..... 161/57, 60, 78, 86, 44, 61, 161/149; 112/402, 412, 415, 417, 440; 61/38

[56] **References Cited**

UNITED STATES PATENTS

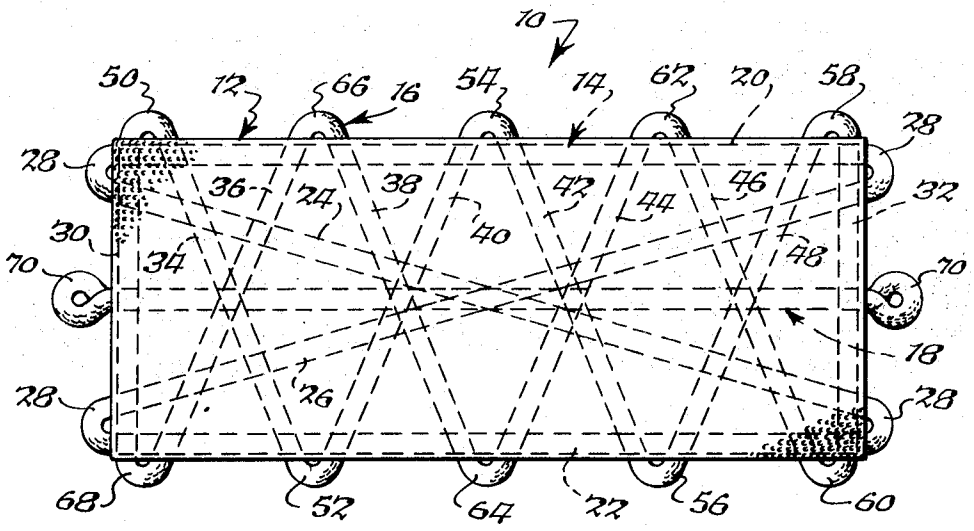
3,616,151	10/1971	Racopoules	161/44
2,596,735	5/1952	Suarez	4/187
3,622,429	11/1971	Kippan	161/60
3,627,620	12/1971	Gasaway	161/57
3,687,764	8/1972	Rogosch et al.	156/179
2,423,308	7/1947	Frieder et al.	28/78
2,943,380	7/1960	Suckle	28/80

Primary Examiner—George F. Lesmes
Assistant Examiner—William R. Dixon, Jr.
Attorney, Agent, or Firm—Christel & Bean

[57] **ABSTRACT**

A flexible bearer adapted to be placed on a ground surface adjacent an excavation for supporting the loose material removed from such excavation and protecting the natural environment adjacent the excavation. The bearer comprises a body formed of a flexible sheet of material reinforced by relatively thick strips of material fixedly secured to the underside of the body. Loops are provided along the marginal edges of the body to receive hooks or other lifting means to raise portions of the bearer.

3 Claims, 4 Drawing Figures



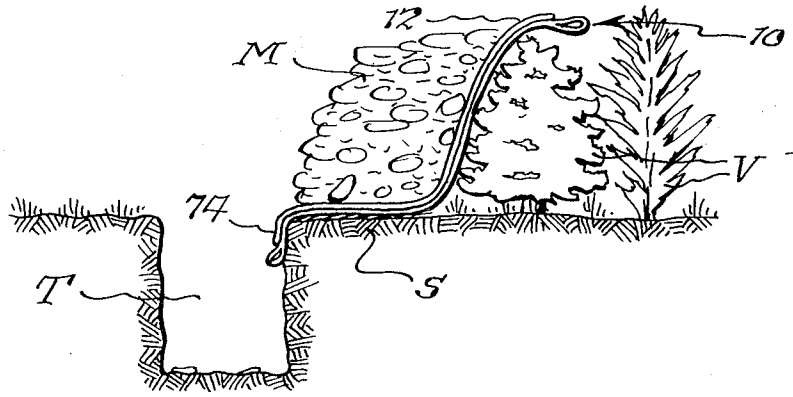


Fig. 1.

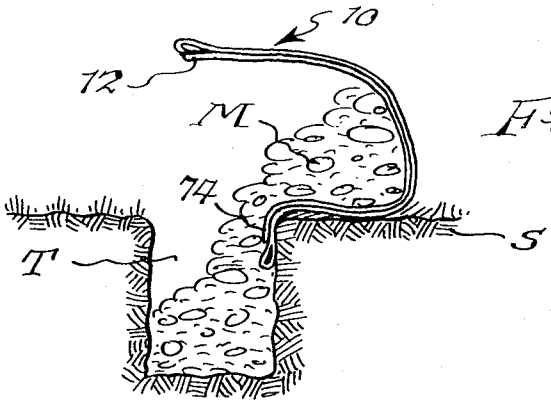


Fig. 2.

Fig. 3.

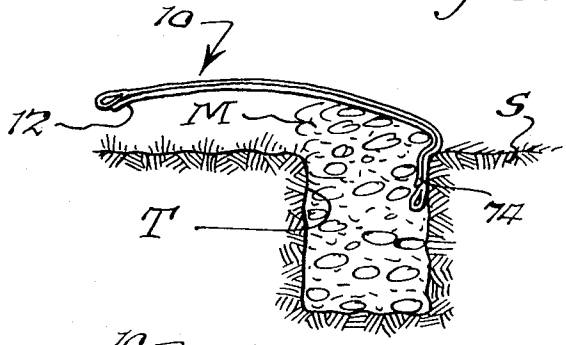
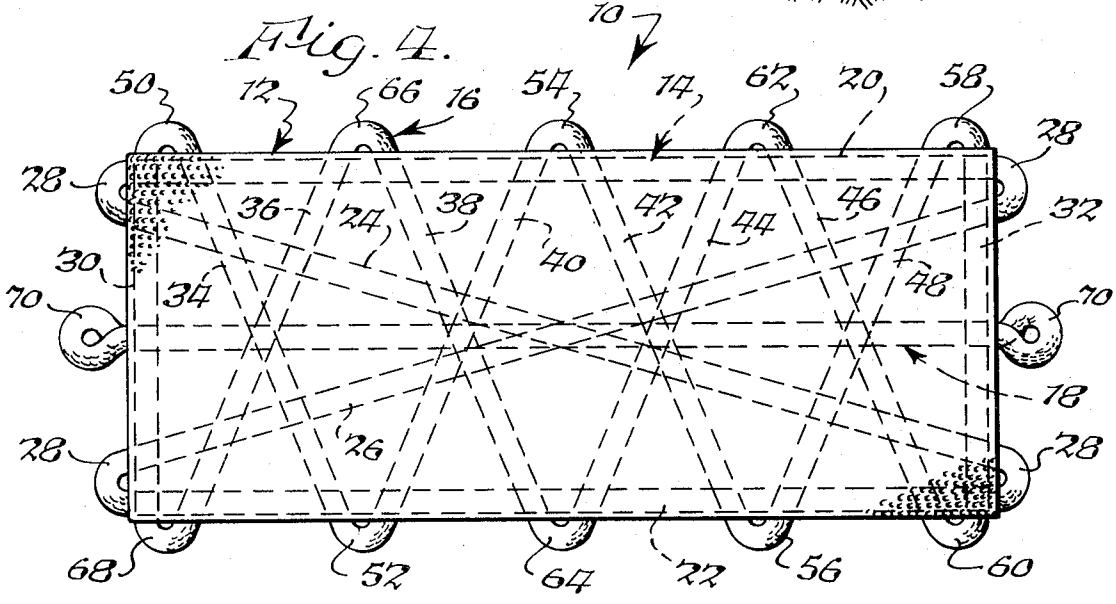


Fig. 4.



FLEXIBLE BEARER

BACKGROUND OF THE INVENTION

This invention relates to a flexible bearer and, more particularly, to a flexible bearer adapted to be used in excavation operations for supporting loose materials.

In various construction operations, such as in the formation of ditches or trenches for the construction of pipeline systems or the like, the loose material removed is generally deposited on the ground surface adjacent the ditch or trech being dug. The indiscriminate dumping of this loose material, which can include slag, stones, rocks and the like, often damages the grass, vegetation and other plant life located along such excavation. Also, the underlying vegetation is further damaged by scraping or raking in an effort to remove the loose material from the ground surface when refilling the excavation. Since it is virtually impossible to recover all of the loose material, an unsightly and unattractive area remains adjacent the excavation after the completion thereof. Sometimes, in order to prevent damaging bushes and trees located near the excavation, the loose material is dumped at a location somewhat remote from the site of the excavation, thereby increasing the time and labor involved for both the excavation and the refill operations.

SUMMARY OF THE INVENTION

The apparatus of the present invention, as hereinafter described, obviates the above disadvantages by providing a novel, flexible, material bearer for supporting material removed from an excavation, which bearer is simple and strong in construction, low in cost, rugged and durable in use, and which also serves to protect underlying vegetation and plant life.

Generally speaking, the material bearer of the present invention comprises a flexible body formed of a suitable sheet of fabric material having relatively thick strips of material fixedly secured to the underside of the body to provide reinforcement for the body. Loops are provided along the marginal edges of the bearer body for receiving hooks or other lifting devices to raise portions of the bearer when loaded with material. The flexibility of the bearer enables the same to follow the contour of the ground surface adjacent the excavation being formed, provides control in metering the flow of material discharged from the bearer, and permits the bearer to be folded or rolled into a compact unit for storage and transport.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross sectional view of a trench excavation, illustrating the use of the material bearer of this invention;

FIG. 2 is a view similar to FIG. 1, illustrating another position of the material bearer of this invention;

FIG. 3 is a view similar to FIG. 1, illustrating still another position of the material bearer of this invention; and

FIG. 4 is a top plan view of a material bearer, constructed in accordance with this invention.

DETAILED DESCRIPTION OF AN ILLUSTRATED EMBODIMENT

Referring now in detail to the illustrative embodiment depicted in the accompanying drawing, there is

shown in FIG. 4 a material bearer, generally designated **10** and constructed in accordance with this invention, comprising a flat body **12**, preferably of a generally rectangularly shaped configuration in plan. Body **12** preferably is formed of a sheet of strong, flexible, moisture-proof, tear-resistant fabric material, such as laminated nylon for example, or any other suitable flexible materials having the same moisture-proof and tear-resistant properties and which are relatively unaffected by sunlight, weathering, oxidation and deleterious chemicals. Body **12** is of a unitary, one-piece construction and can vary widely in length and width, as desired. While the bearer depicted in the illustrative embodiment of FIG. 4 preferably is rectangular in plan, it should be understood that bearer **10** can take any configuration, such as a square or trapezoidal shape in plane for example.

As shown in FIG. 4, body **12** is reinforced by a plurality of backing strips, generally designated **14, 16** and **18,** respectively, of relatively thick, flexible material, sewn or otherwise fixedly secured to the underside of body **12** by any suitable fastening means. Strip **14** is formed of a continuous band having a pair of straight, generally parallel portions **20** and **22** extending lengthwise of body **12** adjacent the marginal edges thereof and a pair of intersecting portions **24** and **26** extending from the opposite ends of straight portions **20** and **22** to the opposite ends of straight portions **24** and **26,** intersecting intermediate the opposite ends thereof. The opposite ends of straight portions **20** and **22** are joined to the opposite ends of intersecting portions **24** and **26** at curved junctures forming loops **28** projecting axially outwardly beyond the opposite ends of body **12.** The strip **16** is formed from an elongated strip of material bent to the desired configuration with the free ends of the strip suitably spliced together by any conventional means.

Strip **16** also is formed of a continuous band having a pair of straight, generally parallel portions **30** and **32** extending crosswise of body **12** adjacent the opposite ends thereof and a plurality of diagonally extending, intersecting portions **34, 36, 38, 40, 42, 44, 46** and **48** interposed between straight portions **30** and **32.** One end of diagonal portion **34** is joined at one end thereof to one end of straight portion **30** at a curved juncture **50,** the other end of portion **34** joining one end of diagonal portion **40** at a curved juncture **52.** The other end of portion **40** is connected to one end of diagonal portion **42** at a curved juncture **54,** the other end of portion **42** joining one end of diagonal portion **48** at a curved juncture **56.** The opposite end of portion **48** is connected to one end of straight portion **32** at a curved juncture **58.** The opposite end of straight portion **32** is connected to one end of diagonal portion **46** at a curved juncture **60** and the other end of portion **46** is joined to one end of diagonal portion **44** at a curved juncture **62.** The opposite end of portion **44** is connected to one end of diagonal portion **38** at a curved juncture **64** and the other end of portion **38** is connected to one end of diagonal portion **36** at a curved juncture **66.** The other end of portion **36** is connected to the opposite end of straight portion **30** at a curved juncture **68.** Thus, strip **16** defines a configurated pattern forming a pair of triangularly shaped side section with three side-by-side related diamond shaped sections extending therebetween. Of course, the pattern of strip **16** illustrated in FIG. 4 is formed from an elongated strip bent to the de-

sired configuration with the free ends of the strip suitably spliced in any conventional manner.

Stip **18** adds additional support and reinforcement for body **12** and the overlying strips **14** and **16.** Strip **18** extends lengthwise of body **12** along substantially the longitudinal axis thereof and terminates at its opposite ends in a pair of loop or eye formations **70** projecting axially beyond the opposite ends of body **12.**

The curved junctures **50–68** form loops projecting laterally outwardly beyond the marginal edges of body **12** and, together with loops **28** and **70** provide means for receiving hooks of a chain or other suitable lifting device for facilitating the raising of one edge of bearer **10** when loaded with material.

The three strips **14, 16** and **18** preferably are formed of a strong, flexible, moisture-proof, tear-resistant fabric such as nylon webbing for example, or any other suitable flexible materials having similar properties and weathering characteristics. The cross patterns formed by strip **16** and the generally longitudinal cross pattern formed by strip **14** offer support and reinforcement for body **12** to enable the latter to support extremely heavy loads. It should be understood that the configurations of each of these strips may vary within the purview of this invention so long as they form intersecting cross patterns extending along the length of body **12** sufficiently reinforcing the latter to withstand the load requirements.

FIGS. **1–3** illustrate the use of bearer **10** in a construction operation in which a trench T is formed for the placement of pipes, conduits and the like. Prior to digging, bearer **10** is placed on the ground surface S adjacent the area to be excavated with the longitudinal edges of bearer **10** extending parallel to the excavation. Normally, bearer **10** would lie in a flat condition following the general contour of ground surface S and the loose material M removed in the formation of Trench T is deposited on body **12** of bearer **10.** However, any vegetation V, as shown in FIG. **1,** or any other upstanding projections, in close proximity to trench T are covered by portions of bearer **10** to protect the same against the loose material dumped on bearer **10.** This allows the material to be expeditiously and rapidly dumped without undue concern for the surrounding vegetation.

A side portion **74** of bearer **10** adjacent the area to be dug is initially reversely bent so as to extend rearwardly of bearer **10.** After the trench T is formed, this reversely bent portion **74** is bent downwardly and suspended in trench T as shown in FIG. **1** for a purpose to be explained.

When it is desired to refill trench T, the side of bearer **10** remote from trench T or side portion **74** is lifted by any suitable means, such as hooks engagable with the loops on bearer **10,** to discharge the loose material M into trench T. The disposition of side portion **74,** which is bent downwardly into trench T, prevents rearward slippage of bearer **10** relative to the loose material M, which otherwise might occur when lifting the opposite side of bearer **10.** Because of the flexibility of bearer **10,** the flow of material M from bearer **10** can be effectively controlled so as to meter the flow of material M into trench T, as shown in FIG. **2,** to more efficiently carry out the refill operation. This is especially important when piping or other components are placed in trench T and all of the material M cannot be refilled in trench T. When the refill operation is completed, as shown in FIG. **3,** bearer **10** is removed and the partially embedded portion **74** is withdrawn from the refilled trench T, leaving a clean area adjacent the trench. While the grass on ground surface S underlying bearer **10** may be matted down, it remains undamaged and in a relatively short period of time resumes its natural condition. The vegetation protected by bearer **10** remains intact, thereby preserving the natural environment around the excavation. Also, where buildings or appurtenances are located in close proximity to the excavation, a portion of bearer **10** remote from the excavation can be bent upwardly to lie against the lower end of such exposed appurtenances to shield them against the material removed from the excavation, which material would otherwise be dumped against these appurtenances. When not in use, bearer **10** can be conveniently folded or rolled into a compact unit for storage and transport.

The present invention thus provides a simple and novel expedient in the form of a flexible bearer for supporting the loose material removed from an excavation while protecting the surrounding area and any vegetation or appurtenances existing thereon. The flexibility of the bearer renders it capable of metering the flow of material discharged from the bearer into the excavation. Moreover, the bearer can be folded or rolled into a compact form for convenience in storage and handling. By the provision of reinforcing, flexible strips secured to the underside of the bearer, the latter is materially strengthened for supporting extremely heavy loads. Also, the symmetrical cross pattern configuration of these strips insures equal support and reinforcement for the entire area of the bearer body.

A preferred embodiment of this invention having been described in detail, it is to be understood that this has been done by way of illustration only and than numerous modifications thereof may be made without departing from the broad spirit and scope of this invention.

I claim:

1. A bearer comprising: an elongated body formed of a flexible sheet of moisture-proof, tear resistant material adapted to receive bulk material on one side thereof; a plurality of reinforcing strips of flexible material sewn to the other side of said body and arranged in an intersecting pattern thereacross, said plurality of reinforcing strips including a first endless strip and a second endless strip; said first strip having a pair of straight portions extending lengthwise of said body along the longitudinal edges thereof and a pair of diagonal portions extending from the opposite ends of one of said straight portions to the opposite ends of the other of said straight portions; said diagonal portions intersecting intermediate their opposite ends; the opposite ends of said straight portions and said diagonal portions being joined together at curved junctures forming loops projecting axially outwardly of the opposite ends of said body; said second strip having a pair of straight portions extending crosswise of said body along the marginal edges thereof and a plurality of intersecting portions between said straight portions extending across said body; certain of said intersecting portions joined to said straight portions and to certain other of said intersecting portions at curved junctures forming loops projecting laterally outwardly from the longitudinal edges of said body.

2. A bearer according to claim 1 including a third reinforcing strip extending lengthwise along the longitudinal axis of said body; said third strip terminating in loop formations projecting axially outwardly from the opposite ends of said body.

3. A bearer according to claim 1 wherein said flexible sheet material is laminated nylon and said reinforcing strips are formed of nylon webbing.

* * * * *