United States Patent

[11] **3,613,567**

[72] Inventor **Anthony Loughran**
Farsley, England

[21] Appl. No. **859,309**
[22] Filed **Sept. 19, 1969**
[45] Patented **Oct. 19, 1971**

[73] Assignees **Supermarket Service, Inc.**
Fort Lauderdale, Fla. ;
Greenwood & Batley Ltd.
Leeds, England, part interest to each

[54] **BAILING PRESS**
4 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **100/226,** 100/3, 100/255, 100/269
[51] **Int. Cl.** **B30b 1/32**
[50] **Field of Search** 100/226, 229, 255, 269, 3

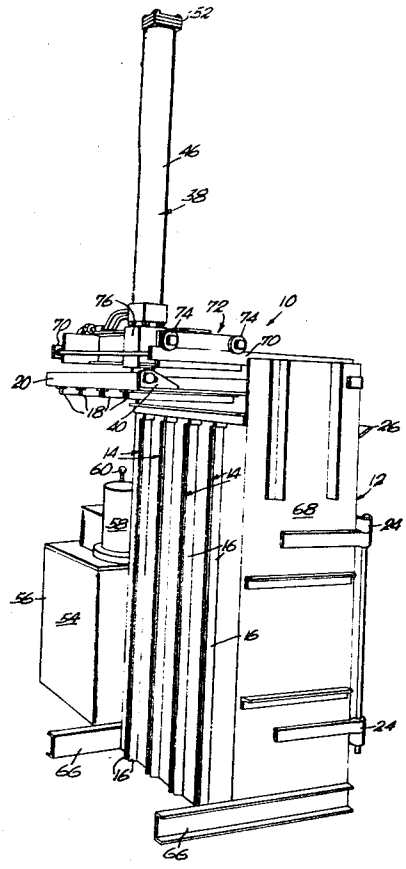
[56] **References Cited**

UNITED STATES PATENTS

119,195	9/1871	Stibbs	100/226
1,002,651	9/1911	Daubenspeck	100/255 X
2,757,603	8/1956	Wilson et al.	100/226
3,280,727	10/1966	Jonas	100/255 X
3,318,231	5/1967	Felts	100/229 UX

Primary Examiner—Billy J. Wilhite
Attorney—John Cyril Malloy

ABSTRACT: A baling press with a rectangular press box defining a workstation for receiving material to be bale pressed therein. The sidewalls of the press box extend above the workstation and include upper rails which extend backwards beyond the defined workstation. A carriage is mounted on the rails for back and forth movement having a carriage hub. Mounted in the hub is piston ramrod assembly with a piston cylinder over the hub and the ramrod extending out of the cylinder below the hub. A press platen attached to the ramrod acts on the material in the workstation. When the platen is in position at the top of the workstation it can move backwards when the carriage is pushed back along the rails. The piston ramrod assembly is operated by a hydraulic pump unit having flexible conduits connected to the piston cylinder. The pump unit can be moved about to a convenient location in the vicinity of the workstation.



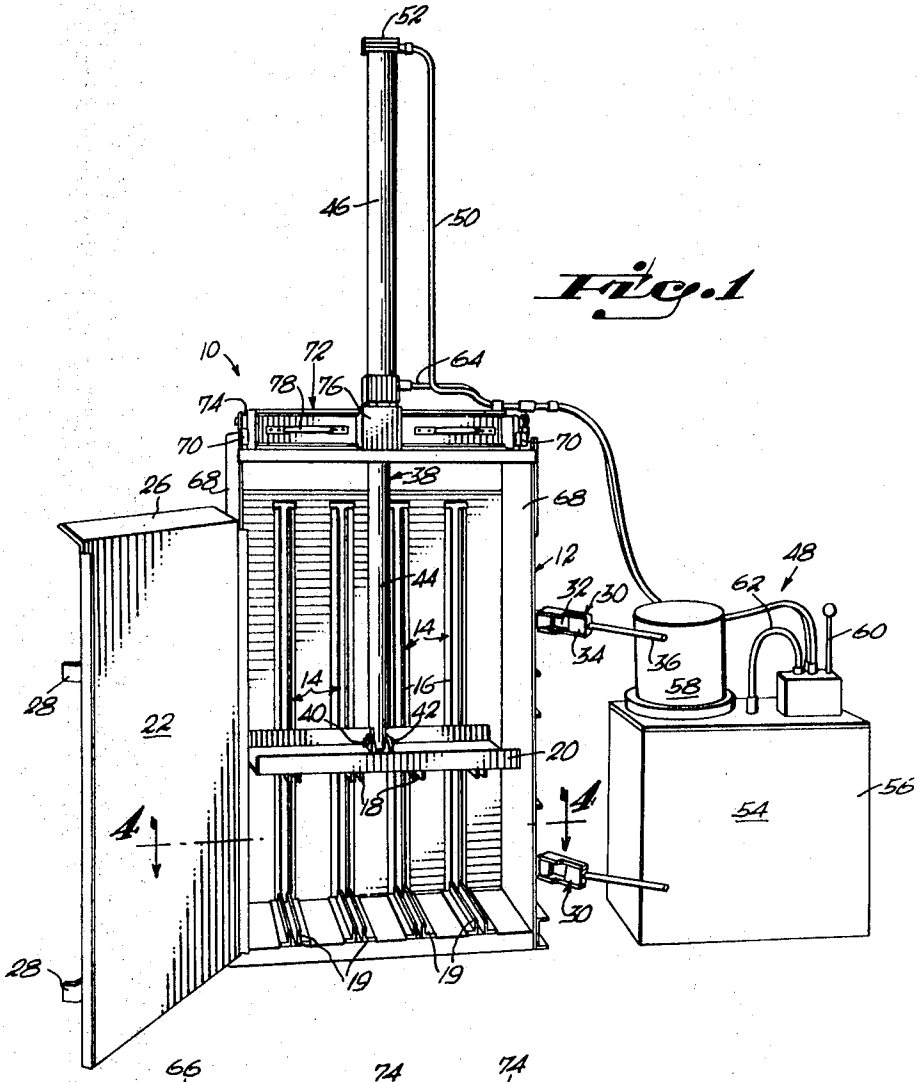


Fig. 1

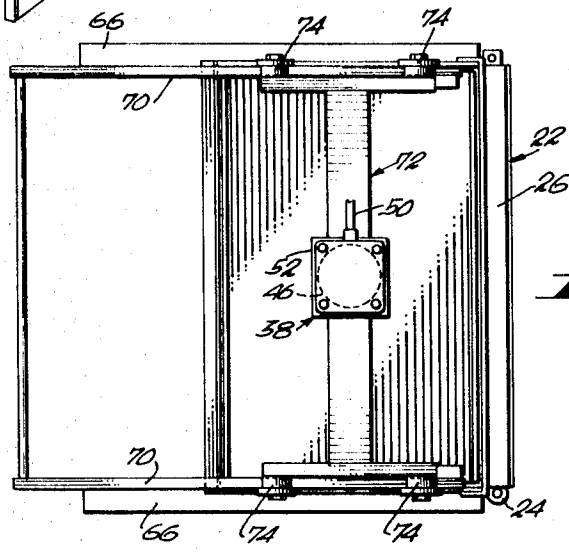


Fig. 3

INVENTOR.
ANTHONY LOUGHRAN
BY John Cyril Malloy
ATTORNEY.

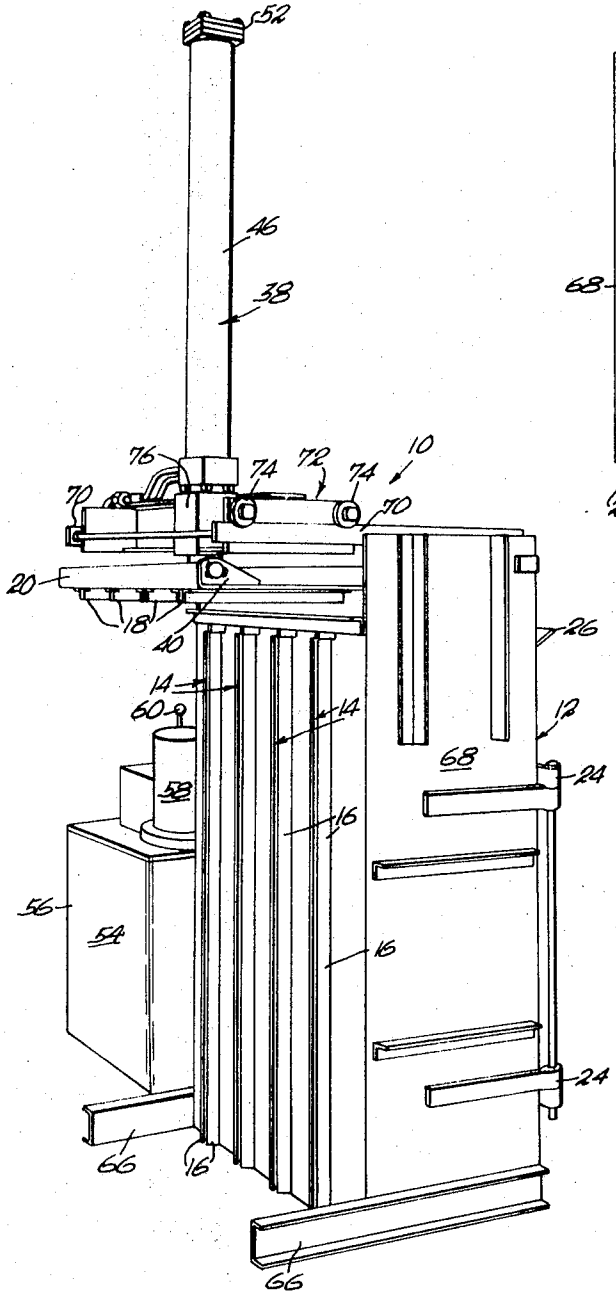


Fig. 2

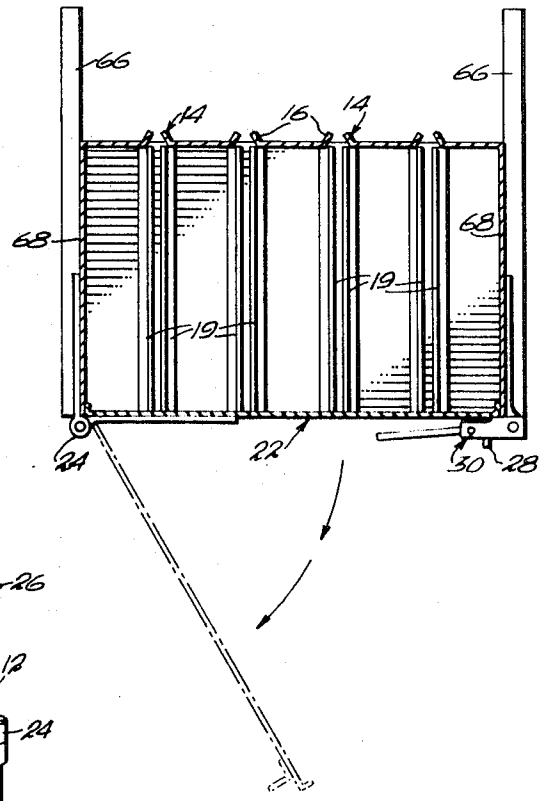


Fig. 1

INVENTOR.
ANTHONY LOUGHRAN

BY John Cyril Malloy
ATTORNEY

BAILING PRESS

BACKGROUND OF THE INVENTION

The present invention relates to a baling presses and more particularly to baling presses useful in the treatment of refuse consisting largely of paper, cardboard, rags, foil, etc.

BRIEF REVIEW OF THE PRIOR ART

Baling presses are usually designed to process a particular material, e.g., cotton. When processing particular materials such as cotton, the baling press may be designed to work with the economics of the system; thus, the bailing press is one of the work stations where a particular material is processed, and can be designed to fit in the workflow scheme of that particular material.

When however, no particular material is to be treated but the baling press is to act on a variety of materials, the situation is somewhat more complex. Usually, considerable space must be provided both from in front and from above to load and remove various materials. This is particularly true of refuse which must often be treated at work stations having little space for installation of complex presses.

The main problem in bailing is that of access in loading and unloading the treated material. There are many prior art examples of a bailing presses for the handling of particular materials. Most of these patents deal with electrical machinery or mechanical presses. The hydraulic presses are bulky and cumbersome devices which are not suitable for use in confined locations.

The Hermann Hill U.S. Pat NO. 1,646,355 relates to presses where loading is from the top and the press platen swings out. The Simon B. Minnich U.S. Pat. No. 2,269,596 relates to a press having a swingable or tilting platens which on the up stroke of the platen swings or tilts out of the way to leave the upper end of the press unobstructed to receive a new charge of material. The R. A. Wilson et al. U.S. Pat. No. 2,757,603 teaches the construction of top loading and pressing and front withdrawal. The E. J. J. Jonsson, U.S. Pat. No. 2,654,309 teaches how a baling press platen may be swung to one side to facilitate top loading. A series of patents to Kunitoshi Tezuka, namely, U.S. Pat. Nos. 3,371,599, 3,386,375, Design Pat. No. 210,850 and Design Pat. No. 210,621 relate to baling presses and compressors handling scrap vehicles. From the foregoing review of the prior art, it is apparent that the baling presses were designed for specific industrial operations rather than for general use. In fact, there is at present little in common in the baling of cotton and the treatment of scrap vehicles.

The present invention deals particularly with the baling of refuse such as paper, cardboard, rags, foil. Although heavier and lighter presses may be provided for different materials such as rags as opposed to cardboard, generally the same design is used. Also, the present invention provides for a compact bailing arrangement with ready access to the press for loading the untreated material and the removal of the baled product.

SUMMARY OF THE INVENTION

Generally speaking, the present invention contemplates providing a baling press with a rectangular press box defining a workstation for receiving material to bale pressed therein, said press box having a securely lockable door. The sidewalls of the press box extend above the workstation and include upper rails which extend backwards beyond the defined workstation. A carriage is mounted on the rails for back and forth movement said carriage having a central hub. Mounted in the hub is a piston ram rod assembly with a piston cylinder over the hub and the ramrod extending out of the cylinder below the hub. A press platen attached to the ramrod acts on the material in the workstation. When the platen is in position at the top of the workstation it can move backwards when the carriage is pushed back along the rails. The piston ramrod assembly is operated by a hydraulic pump unit having flexible conduits connected to the piston cylinder. The pump unit can be moved about to a convenient location in the vicinity of the workstation.

The invention as well as other objects and advantages thereof, will become more apparent from the following detailed description taken in conjunction with the accompanying drawing, in which:

BRIEF EXPLANATION OF THE DRAWINGS

FIG. 1 shows a perspective front view of a baling press contemplated herein with the front door of the press open;

FIG. 2 presents a perspective rear view of the baling press in FIG. 1 with a front door closed;

FIG. 3 depicts a top view of the baling press shown in FIGS, 1 and 2 illustrating the sliding capability of the press platen; and,

FIG. 4 is a view along the lines 4—4 of FIG. 1 depicting the disposition of the platen arrangement, the platen carriage and the front door movement.

DETAILED DESCRIPTION OF THE INVENTION

The bailing press **10** shown in the drawing has a rectangular press box **12** for receiving the material to be compressed. The size of the box may vary and actual sizes are hereinafter given in connection with the details provided relating the actual embodiments found useful in carrying the invention into practice.

Within the box **12** are a plurality of vertical parallel guide runners **14** having outward flanges **16** for cooperating with the runners **18** attached to the bottom of press platen **20**. The box may also include bottom runners **19** parallel to sliding members **18** to assist in bailing the compacted material. These runners have grooves through which baling wire can be passed. The box has a front door **22** fastened by hinges **24**. To avoid the possibility of the press platen **20** engaging the door **22**, the door has an upper outward flange **26**. The door has outer latches **28** which are engaged by corresponding cam locking pieces **30**.

Locking pieces **30** include a latch receiving section **32**, a cam **34** to engage the latch and a handle **36** to move the cam.

Material to be compressed will be placed in box **12** and pressed down by press platen **20**. Press platen **20** is disposed over runners **18** which are under platen, and, the platen extends across box **12** so as to move up and down in the box and compress material therein on the downward movement. The movement of platen **20** is controlled by a vertical piston ram rod assembly **38** which is joined to the platen **20** by a joint **40** consisting of a bolt and wing assembly **42** wherein a bolt passes through the wings and the piston ramrod assembly **38**.

The piston ramrod assembly **38** consists of a ram section **44** and a piston housing section **46** and is actuated by a hydraulic pressure system **48** having an inlet pressure hose **50** connected to the top **52** of the piston housing section **46**. Fluid which is fed through inlet pressure hose **50** to the top **52** of the piston housihg section **46** will drive the ram section **44** down thus pressing the platen **20** against material in press box **12**.

Hydraulic pressure is supplied by a separate pumping unit **54** which has a large fluid container **56**, a driving pump motor **58** a control handle **60** and a safety bypass line **62**. When the material has been compressed, the fluid can be returned to the fluid container by a return line **64**. The platen and ram section return to the press position at the top of the press box **12** by suitable means, such as by hydraulic means or spring means (not shown).

As can best be seen in FIG. **2**, the press box **12** has extra legs **66** extending well behind the press box while the sidewalls **68** extend well over the press box so the platen can be moved back from the defined workstation. These sidewalls **68** support rails **70** upon which is mounted a moveable carriage **72** which rolls along the rails **70** by means of wheels **74**.

Carriage **72** has a central hub **76** which receives the piston ramrod assembly **38**. At the front of carriage **72** (see FIG. **1**) are handles **78** by which one can grip the carriage and move it out of the defined workstation or bring the carriage over the material to be treated.

It will be observed therefore that the present invention provides for a baling press which preferably is made of all steel construction with slots at the back for wiring. The door is hinged and fitted with quick opening fasteners. In some cases, hard wood inserts are placed around the slots on the pressing platen 20 and press box base to prevent certain flimsy waste materials from being damaged by the normal steel construction around the slots. The method of operating the average and heavy duty presses varies very little, although usually, one type is used mainly for light materials and the other presses are used for heavier materials, e.g. cardboard, etc. It is customary to fill the press boxes with the door shut, up to a suitable height in the baling box. When loading, the complete upper structure, i.e. cylinder, bridge and pressing platen are pushed clear of the press box opening by means of the carriage and rail arrangement This leaves the box top completely open for filling with refuse ready for pressing.

Once the press box is filled and ready for pressing the pump unit can be operated by moving the valve lever (with the electric motor running). This causes the piston rod to descend and compress the material up to the maximum preset pressing load which is indicated on a pressure gauge (not shown). The valve lever is then released and springs back to the mid-(neutral) position, stopping the cylinder and locking the load in the cylinder and on the bale. The material can now be lashed or more material can be added in order to obtain larger or heavier bales by returning the press cylinder to the top of its stroke by spring means (not shown). The pressing platen is pushed clear, in order to add further material.

To lash the bale, the door is opened and wire or twine is passed through the grooves in the pressing plate and box base runners being finally tightened at the front of the press. After lashing, the press cylinder is returned to the top position and the bale is removed from the press. The hydraulic pump unit is fitted with a motor suitable for the working pressure of the press, e.g., for use at pressures of up to 2,000 p.s.i. and used with extremely high safety factors. A safely relief valve protects the circuit and prevents any overload from falling on to the electrical equipment.

The press has a number of advantages over the screw type of electrically driven balers. It is not necessary to be careful to fill the box to certain levels as to press ram can stop at any position in its stroke without overloading the motor. Because of this the motor and starter ate standard, and do not require to have special contacts, etc., to withstand overload currents. Ram speeds are faster than on the screw balers. One down and one up stroke of the ram take a total of approximately 20 seconds.

The press is extremely easy to install and use. Maintenance is negligible and any spares required are readily available. In cases where floor space is restricted, the pumping unit can be placed on the side of the press where the door opens as this space is normally wasted. Shorter cylinders than standard can be used to enable presses to be placed in restricted heights.

For the purpose of giving those skilled in the art a better appreciation of the invention, the following details are given with respect to actual embodiments which can be carried out in practice.

What is claimed is:

1. A bailing press comprising in combination:

a rectangular box including opposed, mutually parallel sidewalls integral with a back and bottom wall and defining a forwardly and upwardly opening work space in which a bale is removably formed,

said back wall including a plurality of vertically extending, transversely spaced guide runners defined by integral, rearwardly extending, spaced flanges said backwall,

said bottom wall comprising integral, upwardly extending runners corresponding to those on said backwall and defining grooves opening into said work space and reinforcing said bottom wall,

said backwall including an upper transverse margin below corresponding upper margins of said sidewalls and defining a rearwardly opening space thereat,

said sidewalls including rearwardly projecting track at said upper margins flanking rearwardly opening space on said backwall;

a door hingedly connected on a vertical axis to the forward edge of one sidewall for closing the forward opening of said work space said other sidewall and the edge of said door remote from said vertical axis including releasable lock means for securing said door in a closing position relative to said work space;

a platten assembly reciprocably mounted on the rearwardly projecting track of said sidewalls and including a platten reciprocable through the rearward opening of said backwall,

said platen assembly comprising a carriage having guide wheels engaged with said rearwardly projecting track and a central hub,

a piston-housing-and-ram assembly extending vertically from said hub and a ram reciprocable in said housing under the influence of hydraulic pressure,

said ram being connected to the upper surface of said platten,

said platten including transversely spaced runners corresponding to those of said bottom and backwalls and depending into said work space for facilitating the introduction of baling wire about a compressed bale; and

a portable hydraulic power assembly including an outlet pressure and return line removably connected to said vertical housing for reciprocating said ram and platen when forming a bale, said hydraulic power assembly including a manual control for directing a predetermined maximum pressure to said platten when forming a bale.

2. The structure as claimed in claim 1 in which said carriage is substantially I-shaped in plan where opposite ends are parallel to said upper margins of said sidewalls and said wheels are journaled on said opposite ends, and handle elements projecting forwardly from said carriage for facilitating manual reciprocation of the platten with respect to said work space.

3. The structure as claimed in claim 1 in which said hydraulic power assembly includes a pressure bypass line for relieving pressure to said housing when a predetermined pressure is exceeded.

4. The structure as claimed in claim 1 in which said lock means on said door and other sidewall comprise vertically spaced latch elements, and manually operable cam locking assemblies including a latch-receiving portion and a lock cam abuttingly engageable with said latch elements.