United States Patent [19]

Engebretsen et al.

[11] **3,757,683**

[45] **Sept. 11, 1973**

[54] **COMPACTOR DRIVE CHAIN TENSIONING APPARATUS**

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[73] Assignee: **The Hobart Manufacturing Company,** Troy, Ohio

[22] Filed: **Feb. 9, 1972**

[21] Appl. No.: **224,775**

[52] **U.S. Cl.**..... **100/229 A,** 74/242.11, 100/278, 100/290

[51] **Int. Cl.**..... **B30b 1/18**

[58] **Field of Search**..... 100/289, 290, 278, 100/229 A, 229 R; 74/242.11

[56] **References Cited**

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Attorney—Lawrence B. Biebel, Thomas W. Flynn et al.

[57] **ABSTRACT**

A compactor in which the compacting ram is driven along stationary jack screws by means of internally threaded sprockets mounted on the ram and threadably engaging the jack screws. The sprockets are rotated by means of a drive chain wrapping the sprockets and a drive sprocket. The drive chain is maintained in taut, sprocket engaging relationship to both the drive and driven sprockets by means of a pair of tensioning sprockets pivotally mounted on the ram and urged towards each other into engagement with the drive chain by means of a coil spring.

5 Claims, 2 Drawing Figures

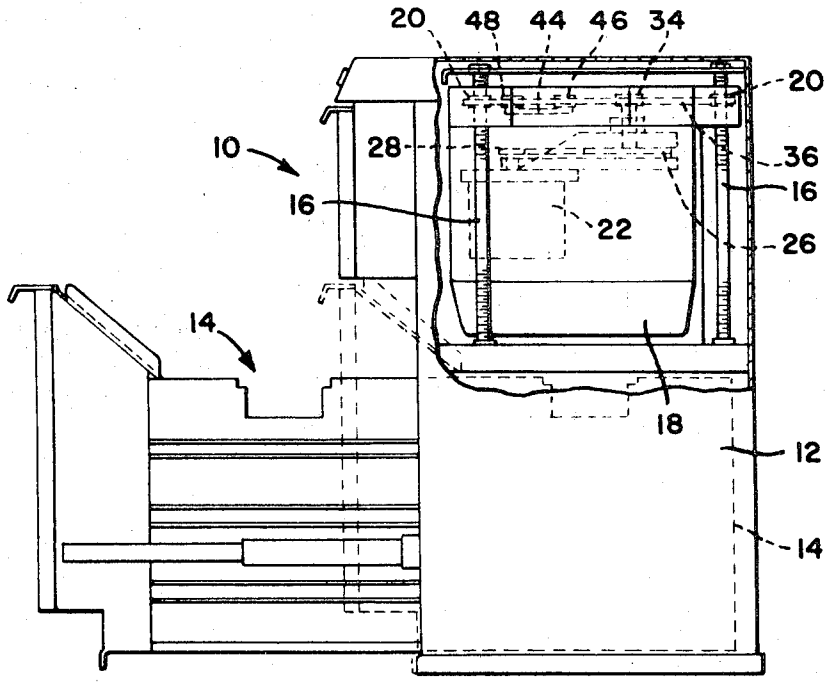


FIG-1

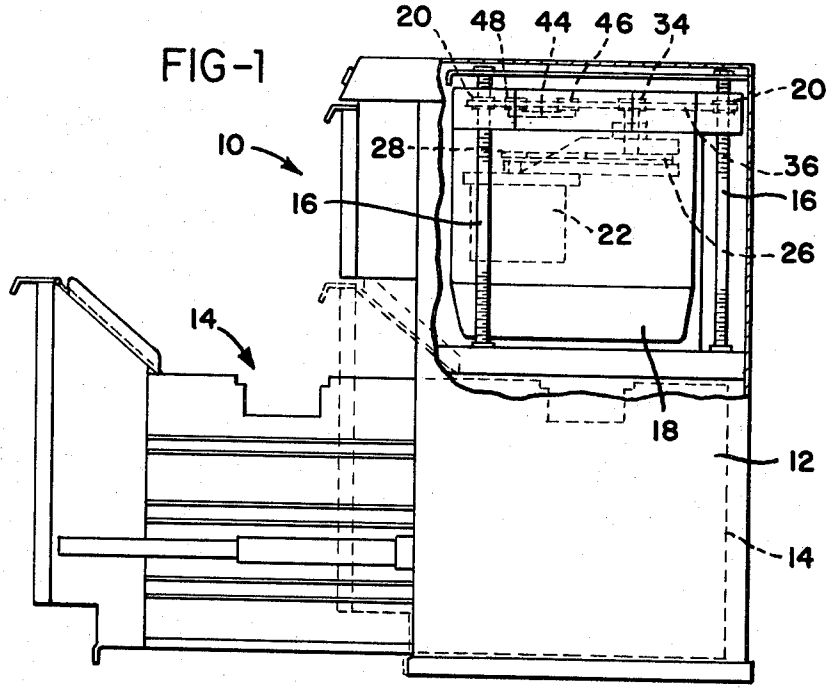
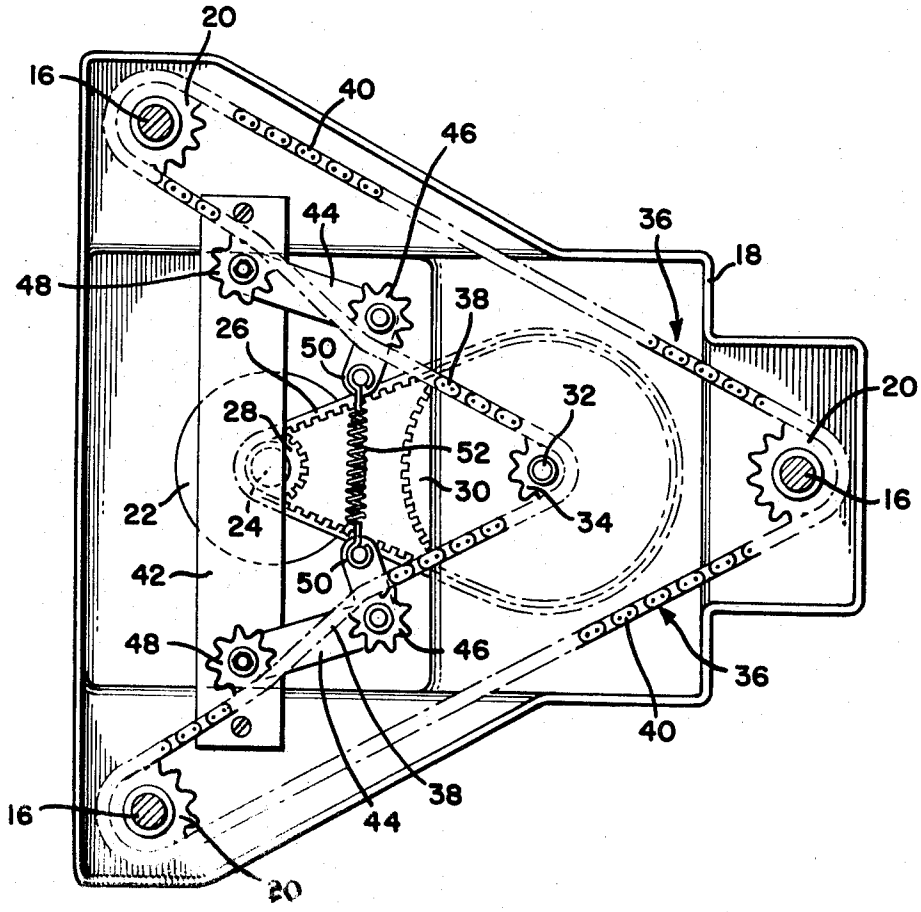

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FIG-2


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COMPACTOR DRIVE CHAIN TENSIONING APPARATUS

CROSS REFERENCE TO REALTED APPLICATION

COMPACTOR AND DRIVE ASSEMBLY, Ser. No. 194,891, filed Nov. 2, 1971.

BACKGROUND OF THE INVENTION

In the above noted, related application, a compactor is disclosed, intended primarily for home use, which includes a housing in which an open receptacle is received and a ram mounted for movement along stationary jack screws into and out of the receptacle to compact waste material therein.

The ram is provided with internally threaded sprockets rotatably mounted thereon and threadably engaging the jack screws so that upon rotation of the sprockets the ram will move upwardly and downwardly along the jack screws. The ram also carries a motor powering a drive sprocket, and a drive chain wraps the drive sprocket and internally threaded sprockets to drive the ram along the jack screws.

It will be apparent that the drive chain, for efficient operation, should be in positive engagement with each of the drive and driven sprockets. For best results this has necessitated maintaining the chains substantially taut and this in turn requires rather careful adjustment of the drive assembly.

SUMMARY OF THE INVENTION

The installation and operation of a drive assembly of the type described above is simplified by purposely utilizing a drive chain of a length such that there is appreciable slack there and providing tensioning devices engaging the chain and maintaining it in positive engagement with the drive and driven sprockets.

In a preferred embodiment of the invention the tensioning means comprises a pair of bell cranks pivotally mounted adjacent one of their ends to a supporting member, which in turn is fixed to a compacting ram. Tensioning sprockets are mounted on the bell cranks in a position such that pivoting of the bell cranks brings the tensioning sprockets into engagement with opposed reaches of the drive chain.

Pivotal movement of the bell cranks is obtained by means of a coil spring attached to each of the bell cranks and extending therebetween, urging the bell cranks toward each other, and of course, resiliently pressing the tensioning sprockets into engagement with the opposed, drive chain reaches.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of a compactor in accordance with the present invention with portions broken away for clarity; and

FIG. 2 is a plan view showing a drive assembly for the compactor incorporating the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As seen in FIG. 1 of the drawings, a compactor **10** in accordance with the present invention includes an upright compactor housing **12.** An open receptacle **14,** in form of a drawer, is slidable between a noncompacting position, shown in solid lines in FIG. 1 of the drawings, and a compacting position within the housing, as shown in dotted lines in FIG. **1.**

Three triangularly arranged, stationary jack screws **16** are mounted in the housing in spaced parallel relationship to each other, with a single jack screw positioned adjacent the rear of the housing **12** and the remaining two jack screws positioned adjacent each of the front corners thereof.

A ram **18** is provided with internally threaded sprockets **20** rotatably mounted thereon and threadably engaging the stationary jack screws **16.** Ram **18** also carries a motor **22** having a drive shaft **24** and a timing belt **26** wraps a pulley **28** on the drive shaft **24** and a large pulley **30** fixed to one end of a shaft **32** carrying a drive sprocket **34** at its opposite end.

A drive chain **36** wraps the drive sprocket **34** and each of the internally threaded sprockets **20,** defining spaced inner and outer chain reaches **38** and **40,** respectively, which are angularly related with respect to each other. A support bar **42** is also mounted on the upper surface of ram **18** and a pair of opposed bell cranks **44** are pivotally attached to the support bar **42** for movement towards and away from each other.

Each of the bell cranks **44** carries a tensioning sprocket **46** rotatably mounted thereon adjacent its outer end for engagement with an outer surface of one of the angularly related inner reaches **38** of the drive chain. Adjacent the point of pivotal attachment of the bell cranks to the support bar **42,** idler sprockets **48** are rotatably mounted and engage inner surfaces of the inner reaches **38** of the drive chain.

The distal ends **50** of the bell cranks extend toward each other and are interconnected by a coil spring **52,** which resiliently urges the two pivotally mounted bell cranks towards each other. As a result, the tensioning sprockets **46** are each resiliently urged into contact with the drive chain to maintain the chain in taut relationship to the sprockets regardless of the direction of rotation of the drive sprocket **34.**

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus and that changes may be made therein without departing from the scope of the invention.

What is claimed is:

1. A compactor comprising:

a. a compactor housing,

b. an open receptacle received in said housing adjacent a lower portion thereof,

c. a plurality of triangularly arranged jack screws mounted in said housing in vertically extending, spaced relationship to each other outwardly of said receptacle,

d. a compacting ram,

e. a plurality of internally threaded triangularly oriented sprockets rotatably mounted on said ram and threadably engaging said jack screws,

f. a drive motor mounted on said ram and powering a drive sprocket positioned substantially medially with respect to said internally threaded sprockets,

g. a drive chain trained about said drive sprocket and each of said jack screw engaging sprockets and defining an outer pair of angularly related chain reaches and an inner pair of angularly related chain reaches spaced from said outer pair,

h. a pair of opposed bell cranks pivotally mounted on said ram for pivotal movement about axes extending parallel to the axes of rotation of said sprockets,

i. idler sprockets mounted on said bell cranks adjacent said pivotal axes thereof and engaging said inner chain reaches on inner surfaces thereof,

j. tensioning sprockets rotatably mounted on said bell cranks and engaging said inner chain reaches on outer surfaces thereof, and

k. a coil spring attached to and extending between opposed ends of said bell cranks and urging said tensioning sprockets towards each other and into engagement with said outer surfaces of said inner reaches of said drive chain to maintain said chain taut about said sprockets.

2. A compactor comprising:

a. a compactor housing,

b. an open receptacle received in said housing,

c. a plurality of triangularly arranged jack screws mounted in said housing outwardly of said receptacle in spaced parallel relationship to each other,

d. a compacting ram movable along said jack screws,

e. drive means mounted on said ram for causing said ram to move along said jack screws into and out of said receptacle,

f. said drive means including:

i. a drive motor mounted on said ram and powering a drive sprocket,

ii. a plurality of driven sprockets threadably engaged with said jack screws, and

iii. a drive chain wrapping said drive sprocket and said driven sprockets and supporting said drive chain with an inner pair of angularly related reaches and an outer pair of angularly related reaches extending substantially parallel to said inner reaches,

g. a pair of tensioning sprockets engaging said inner reaches of said drive chain, and

h. means resiliently urging said tensioning sprockets in directions normal to the axes of rotation of said sprockets to maintain said chain in taut driving relationship to said sprockets.

3. The compactor of claim **2** further comprising:

a. a pair of tensioning sprocket arms,

b. means pivotally mounting said arms on said ram for rotation about axes parallel to the axes of said sprockets, and

c. means rotatably mounting said tensioning sprockets on said arms.

4. The compactor of claim **3** wherein:

a. said urging means urges said tensioning sprockets towards each other.

5. The compactor of claim **4** wherein:

a. said urging means comprises spring means interconnecting said arms at points spaced from said means pivotally mounting said arms on said ram.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,757,683 Dated September 11, 1973

Inventor(s) Einar O. Engebretsen & Ernst Grunewald

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 3, "with" should be omitted; line 3, insert before "an"---in four reaches including---.

Column 4, line 7, after "engaging" insert---two of---; line 7, "inner" should be omitted.

The following claims were omitted and should be added:

-6-

The compactor of claim 2 further comprising:
a) idler sprockets rotatably mounted on said ram and engaging said two reaches of said drive chain on sides thereof opposite the sides thereof engaged by said pair of tensioning sprockets.

-7-

The compactor of claim 2 wherein:
a) said two reaches of said drive chain comprise said inner reaches thereof.

On the cover sheet, after the abstract, "5 Claims" should read -- 7 Claims --.

Signed and sealed this 26th day of March 1974.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

1446