

July 1, 1941.

W. L. OWENS

2,247,398

BANDING MACHINE

Filed March 25, 1940

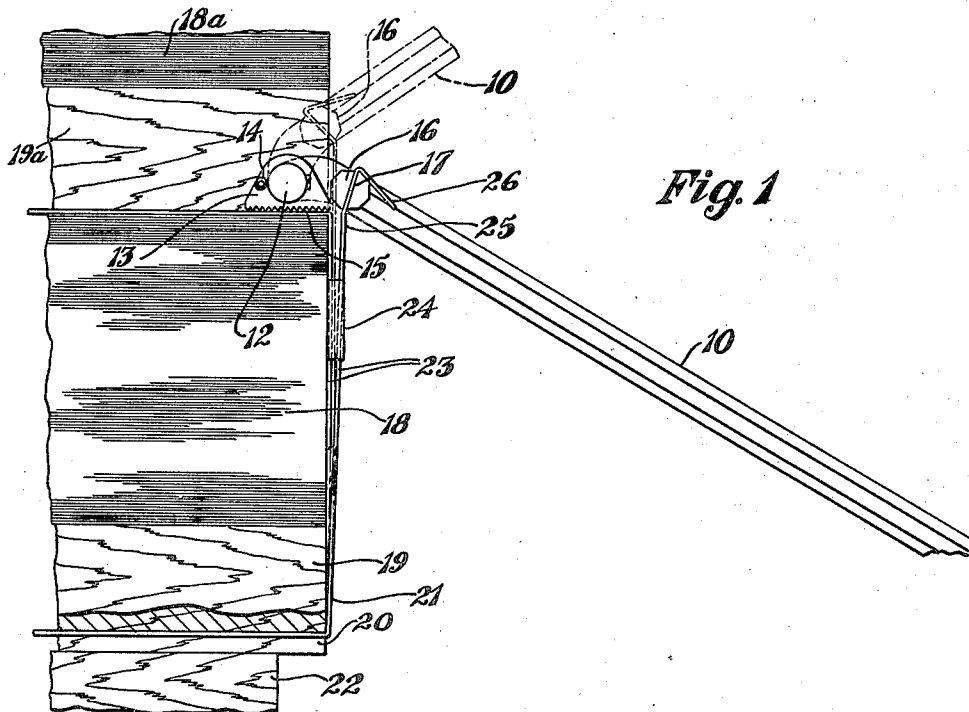


Fig. 1

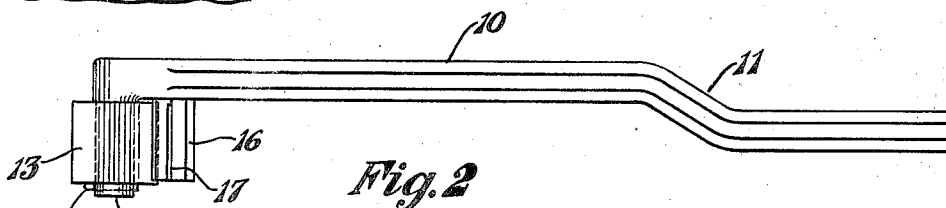


Fig. 2

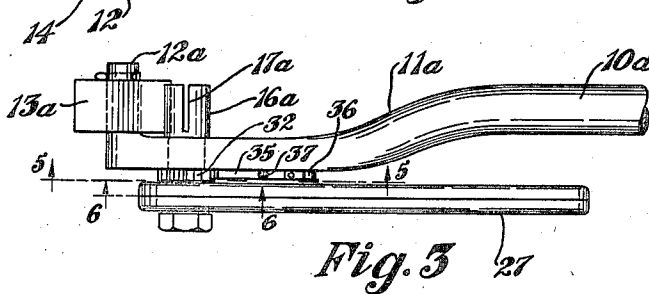


Fig. 3

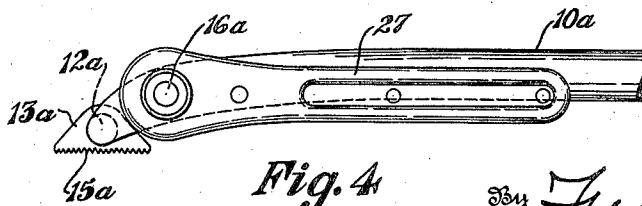


Fig. 4

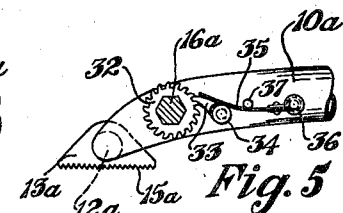


Fig. 5

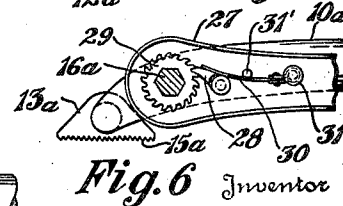


Fig. 6

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2,247,398

BANDING MACHINE

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Application March 25, 1940, Serial No. 325,782

6 Claims. (Cl. 254-79)

The invention relates to the banding or steel binding of metals or other materials in various shapes or forms and more particularly to a banding machine or tool especially adapted for banding of bundles of steel sheets cut to length.

Sheets of steel are usually shipped from the mill in bundles bound with steel bands or strapping, the ends of which are connected together by sheet metal seals.

The customer to whom the sheets are to be shipped usually specifies the weight of the bundles of sheets to be shipped to him, and bundles of sheets of the desired weight are banded together in separate units at the mill for shipping.

Under present practice the sheets are stacked upon a truck or skid as they come from the shear or other equipment, and as the stack of sheets reaches the height necessary to form a bundle of the weight desired by the customer, the truck or skid with the stack of sheets thereon is removed to another location and banded or bundled as a unit with steel strapping or bands fastened together with sheet metal seals, and another truck is in the meantime placed in position at the shears.

This requires the use of a considerable number of trucks or skids as each stack of sheets must be banded or bundled upon a separate truck or skid owing to the nature of the banding machines or tools now in common use.

Such banding machines are placed for operation upon the top of the stack of sheets to be banded or bundled and cannot be used for banding or bundling stacks of sheets which are tiered two or more high.

The present invention relates to a banding machine or tool designed to be used to band or bundle a plurality of stacks of sheets piled in superimposed tiers upon a single truck or skid, thus, permitting one truck or skid to remain in position at the shears or other equipment until a capacity load of sheets has been stacked in tiers thereon, after which the several stacks of sheets may be banded or bundled without removing them from the truck or skid.

An object of the present invention is to provide a banding machine or tool which will satisfactorily band or bundle sheets with steel strapping or bands after the sheets have been tiered in stacks two or more high.

Another object of the invention is to provide a banding machine which will save time, floor space and the number of trucks or skids required for stacking the sheets to be banded or bundled.

A further object is to provide a machine which

will stretch the bands tighter than machines such as are now in common use for this purpose, due to the fact that no part of the improved banding machine is located between the bands and the sheets or other material being banded with steel bands or strapping.

A still further object is to eliminate damage to the sheets or other material being banded as no part of the improved banding machine touches the material being bundled.

Another object of the invention is to provide a machine which is simple, inexpensive and of lightweight construction, while being rugged, easily portable, and quickly and easily operated.

The above objects together with others which will be apparent from the drawing and following description or which may be later referred to may be attained by constructing the improved banding machine in the manner illustrated in the accompanying drawing in which—

Figure 1 is an elevation of the improved banding machine or tool showing the manner of operating the same to stretch a band of steel strapping or the like around stacks of sheets which are piled in tiers;

Fig. 2, a plan view of the tool shown in Fig. 1;

Fig. 3, a plan view of a modified form of tool;

Fig. 4, a side elevation of the tool shown in Fig. 3;

Fig. 5, a section taken as on the line 5-5, Fig. 3; and

Fig. 6, a section taken as on the line 6-6, Fig. 3.

Similar numerals refer to similar parts throughout the several views.

Referring first to the simplest form of the invention shown in Figs. 1 and 2, the improved banding machine or tool includes an operating handle or lever 10 which may be formed of a steel bar or the like preferably offset as at 11 at a point near the end to which the gripper foot is attached.

At this end of the lever an angular stud 12 is formed or fixed thereto and the gripping foot 13 is pivotally mounted thereon and held against displacement as by the cotter pin 14.

This gripper foot has a substantially flat under surface which is preferably serrated as indicated at 15 so as to frictionally engage the top surface of the steel strapping or band to be stretched around the bundle of sheets or the like.

A stud 16 is fixed to the lever 10 adjacent to the foot 13 and parallel to the stud 12 upon which said foot is pivoted, and provided throughout the greater part of its length with a diametric slot 17.

The device may be made in either right or left hand types by forming the offset 11 of the lever in the opposite direction and placing the foot 13 and stud 16 on the opposite side of the lever from that shown in the drawing.

In the operation of the improved banding machine, the material to be banded, if sheets in cut lengths, is piled in a stack indicated at 18, upon the transversely disposed wood blocks 19 in customary manner.

Ordinarily it is only possible to pile one stack of sheets upon a support for banding or bundling since the types of banding machines now in common use cannot be used for banding the stack of sheets if other stacks are tiered above the same.

However, with the present improved banding machine, wood blocks 19a may be placed upon the stack of sheets as shown at 18 and sheets may be stacked thereon as shown at 18a, the improved banding machine being so constructed that it may operate upon the top of the stack of sheets indicated at 18 without interference by the sheets tiered above the same, as indicated in Fig. 1.

The wood blocks are provided with grooves 20 so that the steel band or strapping 21 may be passed between the bottom of each wood block and the truck or skid platform 22 or lower stack of sheets upon which the stack to be banded is supported.

To start the operation the steel band 21 is placed around the material to be banded and the wood blocks on which it is supported with the ends overlapping as indicated at 23 sufficiently to accommodate the ordinary sheet metal seal of the desired size to be used.

The seal, as indicated at 24, is then placed in position after which the foot 13 of the banding machine is inserted between the stacks 18 and 18a and placed upon the top of the band 21 at a point near the edge of the bundle as shown in Fig. 1.

The lever or handle 10 is inclined downward at about a 30° angle below the horizontal as shown in said figure, and overlapping end 25 of the band is inserted into the slot 17 of the stud 16, the protruding end of the band being bent sharply back as at 26 to prevent slipping of the band through the slot.

The handle or lever 10 is then raised to the broken line position shown in Fig. 1 drawing the band tightly around the bundle of sheets and the seal 24 is then crimped with the conventional type of sealing machine.

The lever or handle 10 may then be lowered and the protruding end 25 of the band may be broken or cut off above the seal 24. If desired, the seal may be placed upon the top of the bundle instead of on the side as indicated.

In Figs. 3 to 6, inclusive, is illustrated a modification of the improved banding machine especially adapted for use in close quarters or where an extreme amount of slack in the bands is to be taken up.

In this form of the banding machine or tool the slotted stud which receives the end of the band is rotatably mounted upon the lever handle and provided with means for rotating the stud and holding it in adjusted position.

The handle 10a may be substantially the same as in the form disclosed in Figs. 1 and 2 provided with the offset 11a and having the fixed or integral stud 12a at its working end upon which is pivotally mounted the foot 13a which may be

similar to the foot 13 above described having a flat serrated lower surface 15a.

The stud 16a is provided with the diametric slot 17a for receiving the end of the band and is rotatably mounted upon the lever handle 10a adjacent to the foot 13a and parallel to the axis thereof.

A hollow handle 27 is journaled upon the other end portion of the stud 16a and has mounted therein a pawl 28 engaging the teeth of the operating ratchet 29 which is fixed upon the stud 16a within the hollow handle 27.

This pawl is normally held in engagement with the ratchet 29 as by a spring 30 one end thereof being connected to a stud 31 in the handle 27 and the other end being held against the pawl 28 as shown in Fig. 6, by means of a pin 31'.

A holding ratchet 32 is fixed upon the stud 16a between the handles 10a and 27 and a holding pawl 33 is pivotally mounted upon the handle 10a as at 34 and normally held in engagement with the ratchet 32 as by a spring 35 one end of which is connected to the handle 10a as by a stud 36, the other end being held against the pawl 33 as by the pin 37.

Thus, it will be seen that as the handle 27 is moved upward relative to the handle 10a the operating pawl 28 carried by said handle, engaging the operating ratchet 29 upon the stud, will rotate the stud counter-clockwise, as viewed in the drawing.

As the handle 29 is then moved downward relative to the handle 10a the holding pawl 33 will engage the teeth of the holding ratchet 32 and prevent rotation of the stud 16a while the operating pawl 28 will click over the teeth of the operating ratchet 29.

This type of the machine as well as that shown in Figs. 1 and 2 may be made in either right or left hand types and the feet and slotted studs may be of any desired width to handle bands or strapping of various widths.

In the operation of this form of the machine, the foot is placed upon the band on the top of the stack or bundle to be banded in the same manner as described with reference to Fig. 1 and Fig. 2, with the handle 10a located downward at an angle.

The handle 10a may then be swung upward to take as much slack as possible out of the band which may then be further tightened by operating the handle 27 as many times as necessary to tighten the band to the desired extent after which the seal may be clamped as in usual practice.

Although the improved banding machine is described as especially adapted for banding bundles of sheets cut to length and mounted on wood blocks, it should be understood that the machine may be used for banding plain bundles, boxes, balls, coils or other material.

I claim:

1. A banding machine for stretching a band around a bundle, said machine including a lever, a gripping foot pivotally mounted upon one side of the lever at one end thereof and having a single flat plane serrated surface for frictionally engaging only the band that encircles the bundle being banded, and a stud carried by the handle adjacent to the foot, the axis of the stud being parallel to the axis of the pivot of the foot, there being a diametric slot through the stud for receiving one end of the band.

2. A banding machine for stretching a band around a bundle, said machine including a lever,

a gripping foot pivotally mounted upon one side of the lever at one end thereof and having a single flat plane serrated surface for frictionally engaging only the band that encircles the bundle being banded, and a stud carried by the handle adjacent to the foot, the axis of the stud being parallel to the axis of the pivot of the foot, there being a diametric slot through the stud for receiving one end of the band, the lever being offset intermediate its ends so that the outer end of the lever is substantially in line with the flat face of the foot.

3. A banding machine for stretching a band around a bundle, said machine including a lever, a gripping foot pivotally mounted upon one side of the lever at one end thereof and having a flat serrated surface for frictionally engaging only the band that encircles the bundle being banded, a stud carried by the handle adjacent to the foot, the axis of the stud being parallel to the axis of the pivot of the foot, there being a diametric slot through the stud for receiving one end of the band, means for rotating the stud relative to the lever, and means for holding the stud in adjusted position relative to the lever.

4. A banding machine for stretching a band around a bundle, said machine including a lever, a gripping foot pivotally mounted upon one side of the lever at one end thereof and having a flat serrated surface for frictionally engaging only the band that encircles the bundle being banded, a stud carried by the handle adjacent to the foot, the axis of the stud being parallel to the axis of the pivot of the foot, there being a diametric slot through the stud for receiving one end of the band, ratchet and pawl means for

rotating the stud relative to the lever, and means for holding the stud in adjusted position relative to the lever.

5. A banding machine for stretching a band around a bundle, said machine including a lever, a gripping foot pivotally mounted upon one side of the lever at one end thereof and having a flat serrated surface for frictionally engaging only the band that encircles the bundle being banded, a stud carried by the handle adjacent to the foot, the axis of the stud being parallel to the axis of the pivot of the foot, there being a diametric slot through the stud for receiving one end of the stud, ratchet and pawl means for rotating the stud relative to the lever, and ratchet and pawl means for holding the stud in adjusted position relative to the lever.

6. A banding machine for stretching a band around a bundle, said machine including a lever, a gripping foot pivotally mounted upon one side of the lever at one end thereof and having a flat serrated surface for frictionally engaging only the band that encircles the bundle being banded, and a stud carried by the handle adjacent to the foot, the axis of the stud being parallel to the axis of the pivot of the foot, there being a diametric slot through the stud for receiving one end of the band, ratchet means fixed upon the stud, an operating handle journaled upon the stud, an operating pawl upon the operating handle for engaging the ratchet means to rotate the stud relative to the lever, and a holding pawl upon the lever for engaging the ratchet means for holding the stud in adjusted position relative to the lever.

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