Sept. 25, 1945. P. SPAGNOLI 2,385,477

MATTRESS WRAPPING MACHINE

Filed Dec. 4, 1943 3 Sheets-Sheet 1

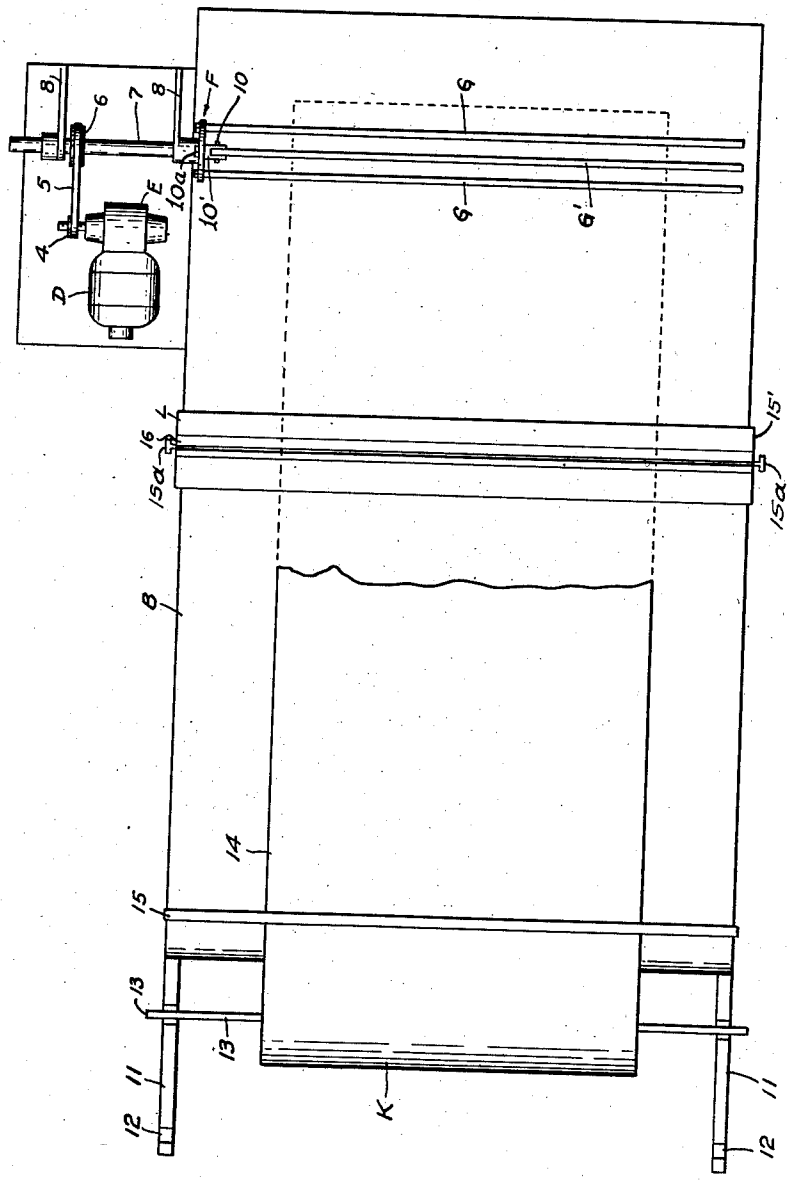


Fig. 1.

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Filed Dec. 4, 1943 3 Sheets-Sheet 2

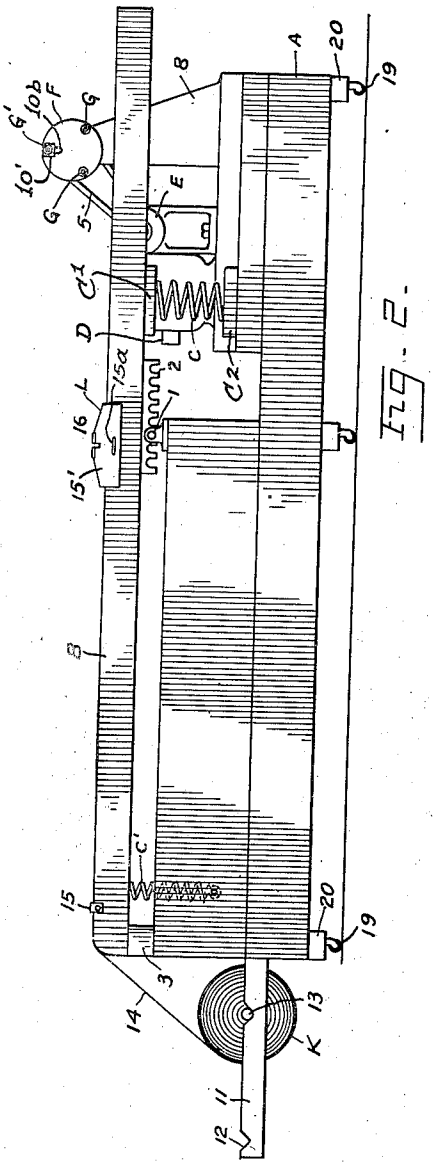


Fig. 2.

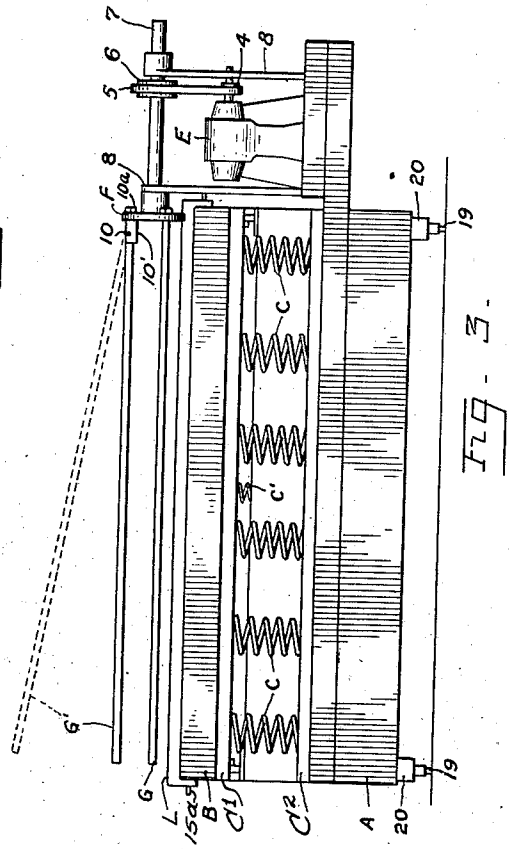


Fig. 3.

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Filed Dec. 4, 1943 3 Sheets-Sheet 3

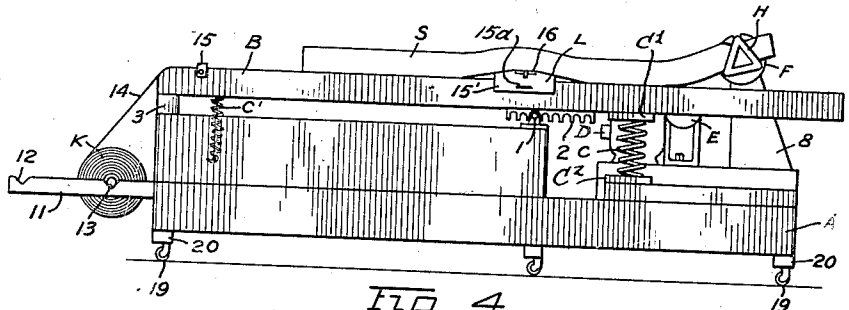


Fig. 4.

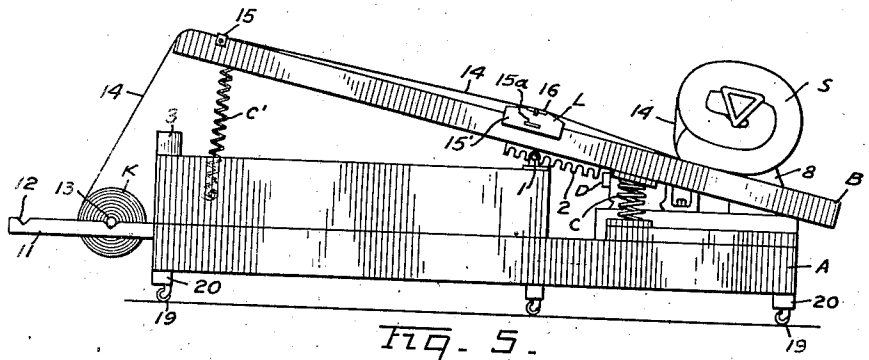


Fig. 5.

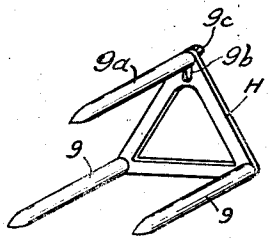


Fig. 6.

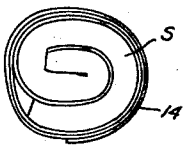


Fig. 7.

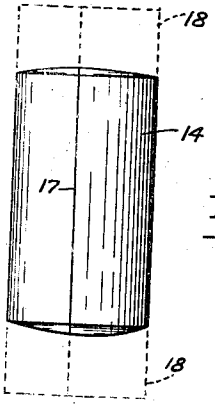


Fig. 8.

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Patented Sept. 25, 1945

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UNITED STATES PATENT OFFICE

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MATTRESS WRAPPING MACHINE

Paul Spagnoli, San Francisco, Calif.

Application December 4, 1943, Serial No. 512,952

6 Claims. (Cl. 270—27)

The present invention relates to improvements in a mattress wrapping machine, and it consists of the combinations, constructions and arrangements hereinafter described and claimed, and in the steps hereinafter set forth.

An object of my invention is to provide a mattress wrapping machine that will take a flat mattress and compress and roll it into a cylindrical form while wrapping paper therearound, the rolled mattress taking up from 30% to 40% less space than before it was rolled. The paper wrapping protects the mattress and keeps it in rolled form so that the package is easy to carry and will consume less storage space.

A further object of my invention is to provide a device of the type described which will wrap mattresses of various sizes and apply a uniform wrapping pressure to the mattress throughout the entire wrapping operation so that all portions of the mattress will be uniformly compressed. The machine is portable and may be operated by unskilled help because it is simple in construction.

Other objects and advantages will appear in the following specification and the novel features will be set forth in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of this application in which

Figure 1 is a plan view of the device;

Figure 2 is a side elevation;

Figure 3 is an end elevation;

Figure 4 is a side elevation of the machine illustrating a mattress placed in position for wrapping;

Figure 5 is a view similar to Figure 4, but showing the mattress completely wrapped;

Figure 6 is a perspective view of a part of the machine;

Figure 7 is an end view of a completely rolled mattress; and

Figure 8 is a plan view of the wrapped mattress illustrating how the ends of the wrapping paper may be folded down to protect the ends of the mattress.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

In carrying out my invention; I provide a frame A on which a mattress-supporting platform B is fulcrumed. The frame A carries a pivot support such as a transversely extending rod 1 and the platform B has a pair of racks 2 placed at the sides thereof, each rack having a plurality of recesses for receiving the rod. The pivot point for the platform B is adjusted by disposing the rod in the desired pair of recesses or notches.

The front end of the platform is yieldingly supported by a plurality of springs C that bear against the frame A and against the platform with sufficient force for holding the rear end of the platform down upon a supporting member 3, carried by the platform. Figure 3 shows six springs being used although I do not wish to be confined to any exact number. If desired, the rear end of the frame A can carry tension springs C' that are connected to the frame A and urge the platform B toward its normal position. These springs could take the place of the springs C if desired or be used in combination therewith. The springs C are adjustable along the frame A toward the front end of the platform. This alters the compressive force applied by the platform against the mattress during the rolling operation. The fulcrum point for the platform may be shifted also to alter the compressive force exerted by the platform against the mattress. In three ways, therefore, the compressive force of the platform against the mattress can be changed; 1, the use of the springs C; 2, the use of the springs C'; and 3, the shifting of the platform fulcrum point. A combination of any two or all three ways could be used.

The mattress rolling mechanism is supported by the frame A and comprises a motor D, see Figure 1, which operates a gear reducing mechanism E. A sprocket 4 is rotated by the gear reducing mechanism E and actuates a sprocket chain shown schematically at 5 which in turn rotates a sprocket 6 that is keyed to a shaft 7. The shaft is rotatably mounted in brackets 8 and carries a disc-shaped head F. Figures 2 and 3 disclose the disc-head F as being placed near one side of the platform B and as carrying two rigid bars G and a pivoted bar G', all three being spaced equidistant apart and the same distance from the center of the head. The dotted line position of the bar G' shows that it can be swung away from the fixed bars G, but not any closer to the rigid bars than a parallel position. The motor may be of any type desired such as a one-half a horsepower and operating on one hundred ten or two hundreds and twenty volts. Any type of power may be used for rotating the disc-head F.

The free ends of the bars G and G' are hollow and are adapted to receive the tines 9 of an end

member H, see Figure 6. The tines have pointed ends for entering the hollow bar ends and they will hold the bar G' from pivoting about its pivot 10. The end member or fork H holds the free ends of the bars in rigid and spaced relation. Figure 1 does not show the forked member H secured to the bars while Figure 4 shows the fork in place after the mattress J has had an end pressed between the bar G' and the bars G.

I provide means for feeding wrapping paper to the mattress during the rolling operation. Figures 1 and 4 show arms 11 extending rearwardly from the back end of the frame A and as having notches 12 for receiving a rod 13 which in turn supports a roll of paper K. The paper 14 is fed from the roll K and overlies the platform B. The paper 14 passes under a guide 15 and over a paper cutter indicated generally at L. The free end of the sheet 14 of paper extends beyond the triple bars G and G'.

I will describe the construction of the adjustable paper cutter before setting forth the operation of the device. The paper cutter extends transversely across the platform B and has side members 15' for permitting the cutter to be slipped along the platform top. The cutter has a transversely extending slotted plate 16 that is spaced above the platform so that a knife may be inserted in the slot and moved therealong for cutting the paper. Figure 4 shows how the mattress portion overlying the paper cutter, humps over the plate 16. The cutter is spaced the desired distance from the mattress rolling head F so that one or more extra layers of paper can be wrapped around the mattress after it is completely rolled.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. The paper 14 is stretched over the top of the platform as shown in Figure 1 and after the paper cutter is placed the desired distance from the mattress rolling head F, the mattress is laid on the platform to overlie the paper. The end of the mattress nearest the head F is placed over the rigid bars G, the bar G' being swung upwardly to permit this movement. When the mattress end is in proper position and supported by the bars G, the bar G' is swung down upon the mattress top to compress it. The forked end member H is now slipped into place, the pointed tines entering the hollow bar ends. The tendency of the clamped mattress end to resume normal position creates a sufficient force on the hinged bar G' to cause it to exert sufficient frictional force for holding the member H from accidental removal. The paper 14 bears against the bars G and underlies the mattress.

The motor D is started and will rotate the head F and bars G and G' to roll the mattress in a counterclockwise direction as shown in Figure 5. During the rolling of the mattress, the front end of the platform is pressed against the mattress, by the springs C for uniformly compressing the mattress and making a tight roll. The paper 14 is wrapped during the rolling process so as to lie between adjacent layers of the mattress roll. The front end of the platform swings downwardly during the rolling operation and fulcrums about the rod 1.

When the mattress is completely rolled, it may be rotated through one or more revolutions to wrap one or more additional layers of paper around the roll. After sufficient paper has been wrapped around the rolled mattress, the motor is stopped and a knife is passed along the slot in the plate 16 for cutting the paper. Glue or other adhesive is applied to the cut edge of the paper and then the motor is again started for wrapping the remaining paper around the bundle. The pressure exerted by the spring-pressed platform against the paper and mattress is sufficient to cause the adhesive to secure the end of the paper to the adjacent layer of paper.

The end member H is removed after the motor is stopped and the wrapped mattress is slid off from the bars G and G'. Figure 8 illustrates the rolled mattress with the end 17 of the paper secured to the adjacent paper layer by the adhesive. The side edges of the paper indicated by the broken lines 18 extend beyond the mattress and these are folded down to cover the ends of the mattress roll. The result is a rolled mattress which is kept sanitary by the paper covering. The package is compact and easy to handle. An example of how the rolled mattress will take up less space than an unrolled one can be given as follows: A mattress having an area of thirty one inches by seventy seven inches and six inches thick will take up fourteen thousand, three hundred and twenty two cubic inches of space. This same mattress when rolled and compressed on my machine will have a diameter of eighteen inches and a length of thirty one inches. The number of cubic inches in the rolled mattress amounts to seven thousand, eight hundred and ninety cubic inches or almost one-half of the unrolled mattress.

The wrapping of each mattress is uniform because the same spring pressure is applied to each. The hinged bar G' simplifies the operation of the machine. All sizes of mattresses can be wrapped up to the capacity of the machine. The end member H holds the bars G and G' true so that uniform mattress rolling will result. The rolled mattress makes the stock of the storekeeper available to him in such a form that it remains clean and he can deliver it to the customer in the original container.

The hinged platform is weighted at the rear end and spring-pressed at the front end to give a uniform pressure to the mattress roll and a firm package is produced. The table or platform and frame may be separated for permitting ready movement of the device from one place to another. The paper cutting device L is adjustable along the platform in order to make possible any number of turns of paper desired to meet varying shipping conditions. The equipment is so simple to use that a team of four women can wrap and stack one mattress per minute and use less paper than that required for conventional baling. It is possible to wrap more than one mattress in a single roll. This is done by feeding a line of mattresses to the rolling head up to the capacity the machine can handle. I show casters or wheels 19 mounted on legs 20 of the frame A for making it easy to move the machine if desired.

The head F is designed to grip mattresses of different thicknesses. The pivoted bar G' has its supporting bracket 10' slidable along the face of the head F. The bracket 10' is held in place by a cap screw 10a and the threaded shank of the screw is slidably received in a radially extending slot 10b in the head F, see Figure 2. By loosening the cap screw 10a, the bracket 10' can be moved toward or away from the center of the head F, the cap screw shank sliding in the slot during this movement. When the proper position is reached, the cap screw 10a is tightened and will hold the bracket 10' rigidly to the head F.

In like manner the end member or fork H, see Figure 6, has one of its tines 9a adjustable toward and away from the center of the member. A radially extending slot 9b is provided in the triangular frame and a cap screw 9c has its shank slidable in the slot. When the bracket 10' is moved toward the center of the head F, the tine 9a is likewise moved toward the center of the member H so that the bar G' will remain parallel with the fixed bars G at all times. The cap screw 9c secures the tine 9a in position. In this way the device is adapted to clamp and hold mattresses of different thicknesses.

The paper cutter L is adjustable along the platform B and I show clamping screws 15a, see Figure 3, for holding the paper cutter at the desired place. The springs C are received in spring seats C1 and C2, the seat C1 bearing against the underside of the platform B and the seat C2 resting on the frame A. It is possible to move the seats so as to position the spring C at the desired distance from the fulcrum point 1. The pressure of the yielding force exerted against the mattress S during the rolling operation is controlled by this arrangement so that the mattress can be compressed to the desired degree.

I claim:

1. In a mattress rolling machine, a mattress gripping and rolling head including a rotatable disc, a pair of bars carried by the head and having their axes paralleling the axis of rotation of the disc, said bars being adapted to bear against the underside of a mattress, a bar adapted to overlie the mattress and being hinged to the disc, and a bar fastening member securable to all three bars after a mattress has been gripped by the bars for holding the bars in parallel arrangement and for securing the mattress to the bars, and means for rotating the disc for causing the bars to roll the mattress.

2. In a mattress rolling machine, a mattress gripping and rolling head including a rotatable disc, a pair of bars carried by the head and having their axes paralleling the axis of rotation of the disc, said bars being adapted to bear against the underside of a mattress, a bar adapted to overlie the mattress and being hinged to the disc, and a bar fastening member securable to all three bars after a mattress has been gripped by the bars for holding the bars in parallel arrangement and for securing the mattress to the bars, and means for rotating the disc for causing the bars to roll the mattress and means for applying a mattress compressing force to the mattress at a point adjacent to the rolling head.

3. In a mattress rolling machine, a mattress supporting platform, a mattress gripping and rolling head including a pair of bars for supporting a mattress end, an adjustable bar carried by the head and being movable relative to the other two bars for accommodating mattresses of different thicknesses, and a fork having tines for engaging with the free ends of the bars, one of the tines being adjustable in accordance with the adjustment of the adjustable bar.

4. In a mattress rolling machine, a mattress gripping and rolling head including a rotatable disc, a pair of bars carried by the head and having their axes paralleling the axis of rotation of the disc, said bars being adapted to bear against the underside of a mattress and having a length at least equal to the width of the mattress, a bar adapted to overlie the mattress and being carried by the disc, said last named bar being as long as the other bars, a bar fastening member securable to the free ends of all three bars after a mattress has been gripped by the bars for aiding in holding the bars in parallel arrangement and for securing the mattress to the bars, and means for rotating the disc for causing the bars to roll the mattress.

5. In a mattress rolling machine, a mattress supporting platform, a mattress gripping and rolling head including a pair of bars for supporting a mattress end, an adjustable bar carried by the head and being movable relative to the other two bars for accommodating mattresses of different thicknesses, and a fork having tines for engaging with the free ends of the bars, one of the tines being adjustable in accordance with the adjustment of the adjustable bar, said adjustable bar being jointed at a point near the head for permitting the bar to be swung away from the pair of bars when receiving a mattress.

6. In a mattress rolling machine, a mattress gripping and rolling head including a rotatable disc, a pair of hollow bars carried by the head and having their axes paralleling the axis of rotation of the disc, said bars being adapted to bear against the underside of a mattress and having a length at least equal to the width of the mattress, a hollow bar adapted to overlie the mattress and being carried by the disc, said last-named-bar being as long as the other bars, a bar fastening member having tines receivable in all three hollow bars after a mattress has been gripped by the bars for aiding in holding the bars in parallel arrangement and for securing the mattress to the bars, and means for rotating the disc for causing the bars to roll the mattress.

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