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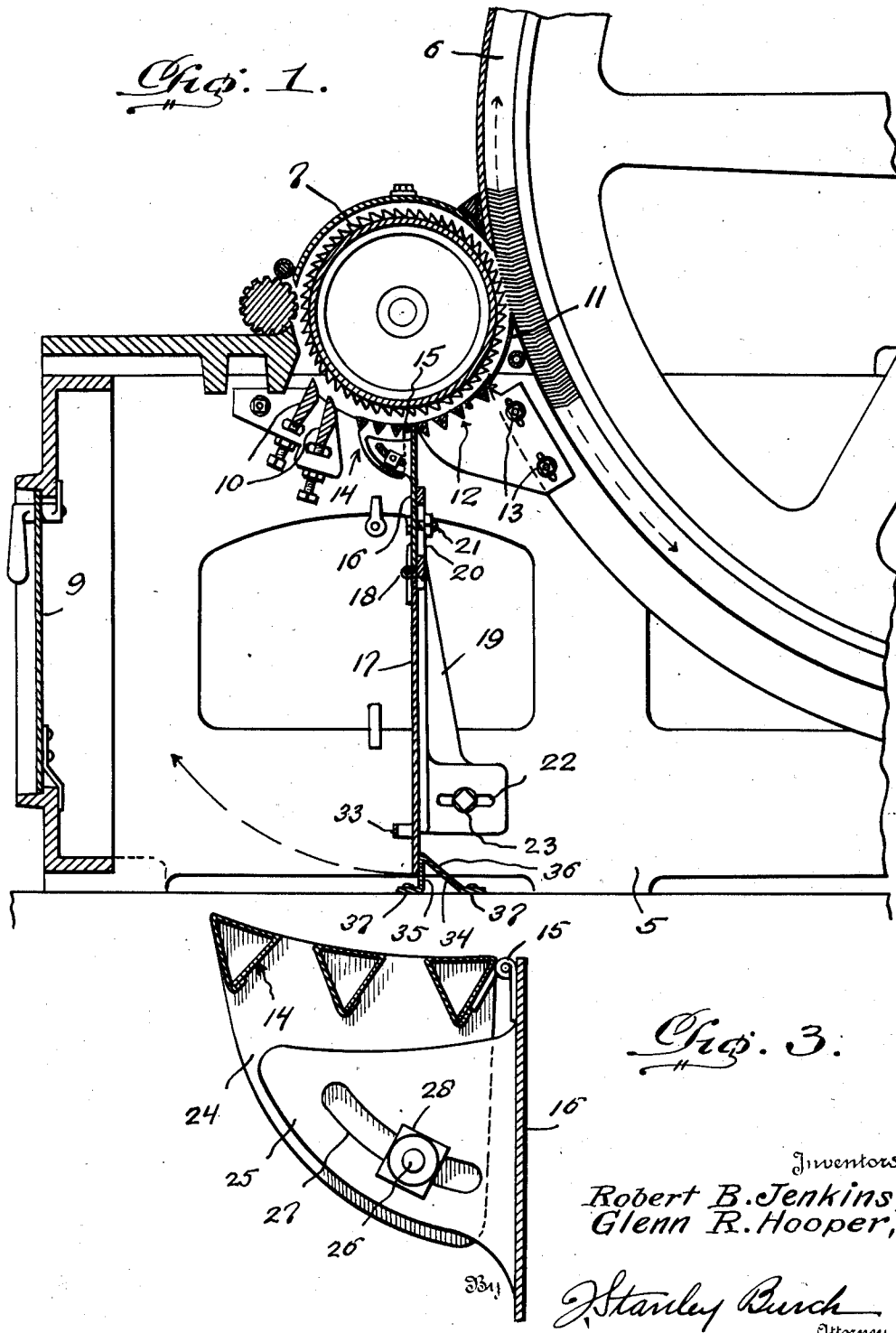
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2,289,017

CARDING ENGINE

Filed Dec. 19, 1940

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

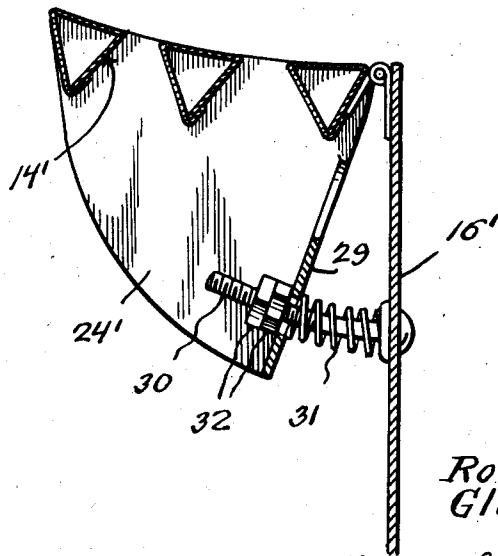
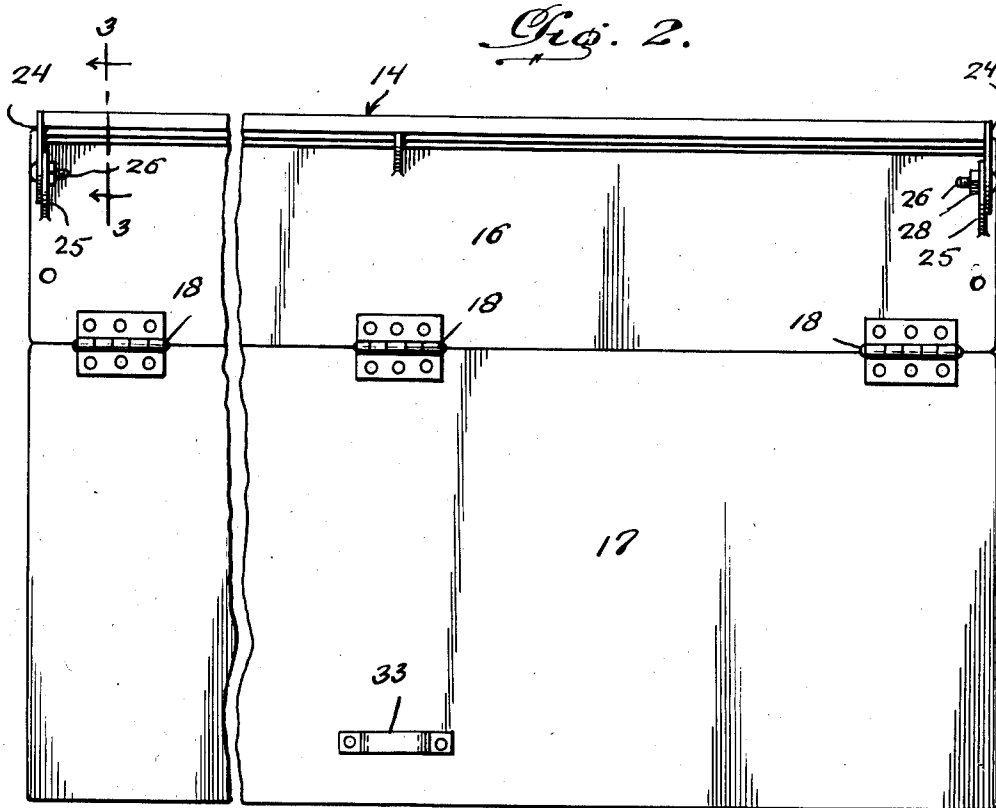


Fig. 4.

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UNITED STATES PATENT OFFICE

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CARDING ENGINE

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5 Claims. (Cl. 19—107)

This invention relates to carding engines, and the primary object is to provide simple and efficient means for separating the waste from the lap as the latter is acted upon by the licker-in roll, and for screening the waste from the licker-in roll so as to separate the valuable fly or lint thereof from the less valuable motes of the same.

A more particular object of the present invention is to provide a screen for the licker-in roll including a hinged back section adjustable toward or from the licker-in roll so as to regulate the draft between the latter and its screen, whereby none of the motes will find their way to the main carding cylinder and whereby the percentage of fly or lint passing to the main carding cylinder may be varied in accordance with the quality of the product desired.

With the above general objects in view, and others that will become apparent as the nature of the invention is better understood, the present invention consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings:

Figure 1 is a fragmentary longitudinal sectional view of a carding engine equipped with a licker-in screen and separating device constructed in accordance with the present invention.

Figure 2 is an enlarged elevational view, partly broken away of the screen and separating device per se, as seen looking toward the right of Figure 1.

Figure 3 is a fragmentary vertical section taken on line 3—3 of Figure 2; and

Figure 4 is a view similar to Figure 3 of a modified form of the invention.

Referring in detail to the drawings, the carding engine includes the usual frame 5 having suitable bearings for the main carding cylinder 6 and licker-in roll 7. The frame 5 has the usual door or closure 9 at the feed end of the engine, and the usual mote knives 10 are provided at the lower back portion of the licker-in roll 7. In addition, the engine has a suitable screen for the main carding cylinder which includes the usual back section 11.

In accordance with the present invention, a novel grid-like screen is provided for and disposed beneath the licker-in roll 7, such screen including a narrow fixed front section 12 supported by the main carding cylinder screen by being adjustably attached to the side flanges of the latter as at 13 in a manner commonly prac-

ticed in mounting ordinary screens for licker-in rolls. As the fixed section 12 of the licker-in screen is relatively narrow, a considerable space is left between the same and the mote knives, a portion of which is taken up by means of an adjustable back section 14 of the licker-in screen. This back section 14 is hinged at 15 along its front edge adjacent the rear edge of the fixed front section 12, so that such back section 14 may be swung vertically for adjustment toward or from the licker-in roll 7. In the operation of the engine, the main carding cylinder 6 rotates at a relative high speed so that a draft is caused between the licker-in roll and its screen. By adjusting the back section 14 of the licker-in screen relative to the licker-in roll, this draft may be regulated so that none of the motes may be carried to the main carding cylinder. The ideal adjustment is such that practically all of the motes will pass downwardly through the adjustable rear section 14 of the licker-in screen, the fly or lint passing downwardly through the fixed front section 12 of the licker-in screen. By adjusting the back section of the licker-in screen, it will be apparent that the draft may be so controlled that the percentage of fly or lint passing to the main carding cylinder may be regulated in accordance with the quality of the product desired. The fly or lint which is not carried to the main carding cylinder and which falls through the front section 12 of the licker-in screen will be directed into that portion of the frame which receives the waste from the main carding cylinder, the motes passing through the adjustable screen section 14 being collected within the back portion of the frame. In order to maintain the collected fly or lint separate from the collected motes so that they may be independently removed, we provide within the frame 5 beneath the licker-in roll and its screen a transverse partition including an upper section 16 and a lower section 17 hinged as at 18 to the upper section 16 for vertical swinging movement. Brackets 19 are secured to opposite sides of the frame 5 of the engine, the upper portions of said brackets having vertical elongated slots 20 receiving bolts 21 which pass through the upper section 16 and provide for vertical adjustment of the partition. The hinge 18 connects the back section 14 of the licker-in screen with the top of the partition, and the vertical adjustment of such partition permitted by the slots 20 enables setting of the back section 14 of the licker-in screen flush or in alinement with the front section 12 thereof as required for best results. The

brackets 19 are also provided at their lower attaching portions with horizontal elongated slots 22 receiving bolts 23 which pass through the frame 5 and provide for adjustment of the brackets 19 longitudinally of the machine. Thus, the brackets 19 and the partition may be adjusted forwardly or rearwardly so that the front edge of the adjustable licker-in screen section 14 may be brought into close proximity with the rear edge of the fixed section 12 of the licker-in screen as is also required for best results.

In the construction shown in Figures 1 to 3 inclusive, the adjustment of section 14 of the licker-in screen is effected and maintained by providing the latter with side flanges 24 overlapping rearwardly projecting side flanges 25 provided on the upper portion 16 of the partition, bolts 26 being passed through the flanges 24 and arcuate elongated slots 27 in the flanges 25 and receiving nuts 28. Thus, the screen section 14 may be swung relative to the upper section 16 of the partition upon loosening the nuts 28, and after the screen section 14 has been adjusted in the desired relation to the licker-in roll, the nuts 28 may be tightened to secure this adjustment.

In the modification of Figure 4, the section 14' of the licker-in screen may have inwardly directed flanges 29 on the side flanges 24' thereof and through which slidably project bolts 30 attached to and projecting rearwardly from the upper partition section 16'. In this form, the flanges 25 are omitted, and coiled springs 31 are provided about the bolts 30 between the flanges 29 and the partition section 16'. Also, nuts 32 are threaded on the bolts 30 in back of the flanges 29 so as to limit the upward swinging movement of the screen section 14' under the influence of springs 31. With this construction, the screen section 14' is yieldingly held in upwardly swung position relative to the licker-in roll and such position is adjusted by adjusting the nuts 32 which limit the upward swinging movement of the screen section 14'. At the same time, should any lumps of material pass between the licker-in roll and the screen section 14', the latter is permitted to yield away from the licker-in roll so as to avoid any damage or detrimental results, the springs 31 permitting this yielding. As soon as the lumps are broken up or pass, the springs 31 will return the screen section 14' to its proper upwardly swung position relative to the licker-in roll.

To facilitate swinging the section 17 of the partition rearwardly and upwardly, the same may be provided at the bottom with a suitable handle 33, and any suitable means may be provided for temporarily holding the section 17 in its upwardly swung or open position.

When the back section 14 or 14' of the licker-in screen has been properly adjusted, the light weight fly or lint will pass forwardly, the majority thereof passing downwardly through the screen section 12 so as to fall into the bottom of the frame 5 at the right hand side of the partition where the waste from the main carding cylinder 6 accumulates. At the same time, the heavier motes pass through the screen section 14 or 14' and fall into the bottom of frame 5 at the left hand side of the partition. In this way, the motes are separated from the fly or lint, with respect to the waste from the licker-in roll, and such motes are maintained separate from the fly or lint collected. As the motes are

prevented from passing through to the main carding cylinder, and as the desired percentage of lint is collected, it will be apparent that less stripping of the licker-in roll, the main carding cylinder, and the usual doffer of the carding engine will be required. Also, the carding cylinder will not be subjected to the detrimental effects of the motes which ordinarily pass thereto. By means of my invention, high speed operation of the engine is possible without detrimental effects, and the various parts will have a longer period of usefulness and will require less frequent renewal or cleaning. In addition, the percentage of fly or lint passing to the main carding cylinder may be conveniently regulated in accordance with the desired quality of the product.

The motes will first be removed, after which the fly or lint may be removed separately. In order to facilitate removal of the fly or lint, as well as to limit the downward swinging movement of the hinged partition section 17 to a vertical position, we provide a threshold 34 transversely of and within the frame 5 at the bottom of the partition. This threshold consists of a channel-like sheet of metal of inverted substantially V-shape, one side of which is vertical as at 35 and the other side of which is inclined as at 36. The vertical side or wall 35 forms a stop for the hinged partition section 17 and is disposed toward the back of the machine so as to contact the front surface of the lower edge portion of said partition section 17 when the latter is lowered. As the inclined side or wall 36 is disposed toward the front of the machine within the compartment where the fly or lint collects, it provides an inclined plane upwardly over which the fly or lint may be readily drawn for removal from the machine. The walls 35 and 36 are preferably provided at their bottom edges with flanges 37 to facilitate fastening of the threshold to the floor.

From the foregoing description, it is believed that the construction and operation, as well as the advantages of the present invention will be readily understood and appreciated by those skilled in the art. It will be apparent that the device is extremely simple and durable in construction, highly efficient in operation, and capable of being readily and economically manufactured and installed. Minor changes in specific details of construction illustrated and described, are contemplated within the spirit and scope of the invention as claimed.

What we claim as new is:

1. In a carding engine, a licker-in roll, a screen mounted beneath said licker-in roll, said screen including a fixed front section and a back section, a partition beneath said screen including a fixed upper section and a lower section hinged to said upper section for vertical swinging movement, said back section of the screen being hinged at its forward edge to the upper edge of said partition for vertical adjustment toward and away from the licker-in roll, and means to regulate the adjustment of said back section relative to the licker-in roll.

2. In a carding engine, a licker-in roll, a screen mounted beneath said licker-in roll, said screen including a fixed front section and a back section, a partition beneath said screen including a fixed upper section and a lower section hinged to said upper section for vertical swinging movement, said back section of the screen being hinged at its forward edge to the upper edge of said parti-

tion for vertical adjustment toward and away from the licker-in roll, means to regulate the adjustment of said back section relative to the licker-in roll, and means to effect vertical adjustment of said partition to aline the screen sections.

3. In a carding engine, a licker-in roll, a screen mounted beneath said licker-in roll, said screen including a fixed front section and a back section, a partition beneath said screen including a fixed upper section and a lower section hinged to said upper section for vertical swinging movement, said back section of the screen being hinged at its forward edge to the upper edge of said partition for vertical adjustment toward and away from the licker-in roll, means to regulate the adjustment of said back section relative to the licker-in roll, means to effect vertical adjustment of said partition to aline the screen sections, and further means to effect adjustment of said partition longitudinally of the engine to bring the screen sections in contiguous relation.

4. In a carding engine, a licker-in screen including a front section having means to mount

the same in a fixed position beneath the licker-in roll, a partition adapted to be mounted transversely beneath the licker-in roll, and a back screen section hinged to the upper edge of said partition, yieldable means to swing the back section upwardly, and adjustable means for regulating the upward limit of swinging movement of said back section.

5. In a carding engine, a licker-in roll, a screen mounted beneath said licker-in roll, said screen including a fixed front section and a back section hinged for vertical swinging movement toward and away from the licker-in roll, means to secure said hinged back section in any desired position of adjustment relative to the licker-in roll, whereby the draft between the licker-in roll and said screen may be regulated, and a vertical partition arranged beneath said screen and extending to the point of juncture of the screen sections, said partition including a fixed upper section and a lower section hinged to said upper section for vertical swinging movement.

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