April 7, 1942. R. A. REID 2,278,564

SANDING MACHINE

Filed May 6, 1940

Fig. 1

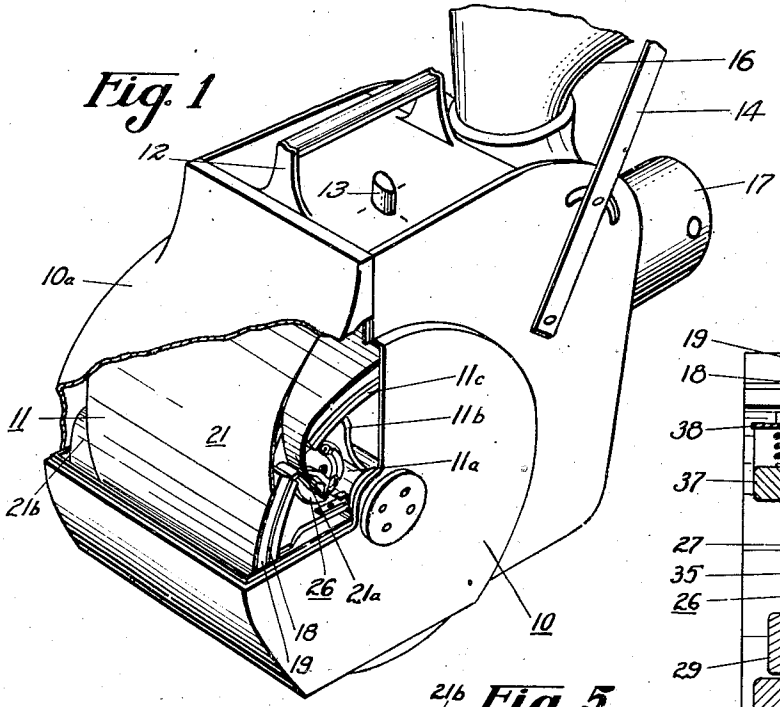



Fig. 4

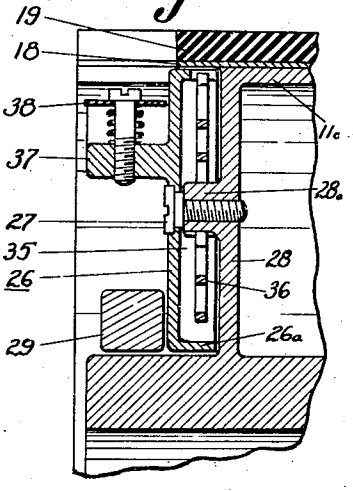
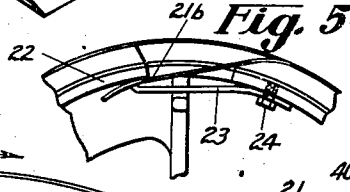



Fig. 5



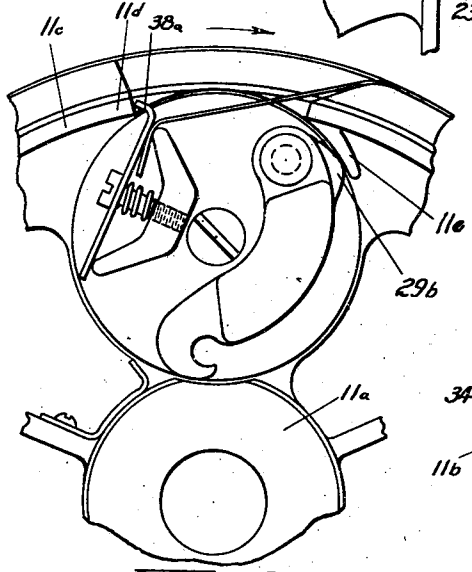




Fig. 3

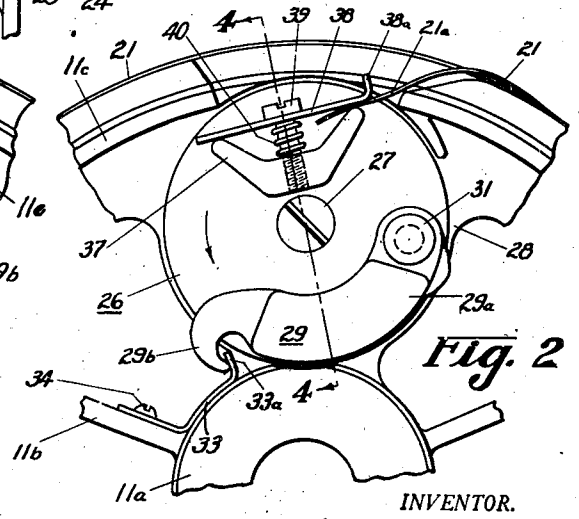



Fig. 2

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# UNITED STATES PATENT OFFICE

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## SANDING MACHINE

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4 Claims. (Cl. 51—194)

This invention relates to sanding machines and has particular relation to means for holding a sheet of abrasive, such as sandpaper, on the drum of a sanding machine.

In sanding machines of the character here considered, it is the usual practice to employ a revolving drum or belt to which a strip of abrasive, such as sandpaper or emery paper, is secured. In ordinary practice, such abrasive strips are generally secured to the drum or belt by clamping the abrasive strip to the drum, but the means ordinarily used have a disadvantage in that the paper loosens in use, and is destroyed, by reason of looseness or slackness, in a relatively short period. I have found that this looseness occurs from two possible causes; improper application and stretching of the paper from expansion due to heat, and the stress of operation.

It is a general object of my invention to overcome this disadvantage of the usual clamping means, and to provide a spring member for tightening the sandpaper strip by spring pressure while the sanding machine is in use.

Another general object of the invention is the provision of means such as will prevent incorrect application of paper.

I have found that it is advisable, in using a spring tightener, to employ a latch for holding the spring tightener in "cocked" or stressed condition while the sandpaper strip is being clamped to the tightener, but I have also found that users frequently forget or neglect to release the latch on the tightener, so that the spring may tighten the sandpaper strip in use, thus, of course, nullifying the effect of the spring.

This condition, then, leads to another object of my invention, which is to provide means which will automatically release the latch to permit the spring to become effective as soon as the machine has started up.

Other and further features and objects of the invention will be more apparent to those skilled in the art upon a consideration of the accompanying drawing and following specifications, wherein is disclosed a single exemplary embodiment of the invention, with the understanding, however, that such changes may be made therein as fall within the scope of the appended claims, without departing from the spirit of the invention.

In said drawing:

Figure 1 is a view in perspective of a sanding machine in which a sandpaper strip tightener, constructed according to my invention, may be employed.

Figure 2 is a view in perspective showing a portion of the sanding drum of the machine shown in Figure 1, and illustrating how the spring tightener is applied to the drum. The tightener is shown in its latched position.

Figure 3 is a fragmentary view in end elevation of the tightening means shown in Figure 2 as it appears when the latch has been released, either by centrifugal force or manual operation thereof.

Figure 4 is a partial view in section, taken along the line 4—4 of Figure 2, and illustrating the sanding strip tightening means, and

Figure 5 is a partial or fragmentary view of the clamping means employed for clamping the opposite end of the sanding strip to the drum.

Referring now to the drawing:

The device illustrated in Figure 1 consists of a sander casing 10 in which a sander drum 11 is rotatably mounted. The casing has a lifting handle 12, and the energization of the sanding machine is controlled by means of the switch 13. A removable front 10*a* is provided on the sander casing. The machine is moved and guided by means of the handle 14, and a bag 16 is provided for the dust from the sanding operation. The member 17 is a small motor used to power a blower for carrying the dust from the sander into the bag 16.

The drum 11, illustrated more particularly in Figure 1, consists of a cylindrical member having the hub, such as 11*a*, the fan spokes 11*b*, and the drum proper illustrated at 11*c*. The drum 11*c* is covered on its outer face with a tightly wound strip of fabric, illustrated at 18, on which a cylindrical rubber pad 19 is secured.

The sandpaper strip, illustrated at 21, is formed of a paper or cloth strip to which abrasive, such as sand or emery, has been applied. The strip 21 is cut on the bias at its ends so that, when the strip is applied to a cylinder, the ends abut one another and the biased edges adjoin, so that when the sanding drum is applied to a work surface, contact of the sandpaper strip with the work surface is transferred, when the drum is rotating, from the end of the strip to the beginning of the strip without the use of a square cut joint. In this way tearing of the joint at the ends of the strip is avoided.

The ends of the strip 21, therefore, are narrow triangular pieces, such as illustrated at 21*a* and 21*b*. The drum preferably revolves in the direction of the arrow, and the end 21*b* of the strip 21, which may be termed the "leading" end, is clamped to the sanding drum by means of a conventional clamp comprised of the abutment 22, the clamping clip 23, and a screw 24, as illustrated in Figure 5.

The spring tightening means, constructed according to one embodiment of my invention, is preferably engaged to what may be termed the "trailing" end 21*a* of the strip 21.

The spring tightening means is received within a recess between the hub and the cylinder of the drum and is disposed between the fan

blade spokes of the drum. The tightener, constructed according to my invention, includes a disc-like member 26 rotatably mounted by means of a screw 27 on a plate-like portion 28 of the cylinder 11. A curved arm or latch 29 is pivotally attached to the disc near its periphery by means of a screw 31. The latch arm 29 has a curved weight portion 29a and a hooked outer end 29b. A strap or plate-like strip 33 is secured to a spoke 11b and against the hub of the cylinder by means of a cap screw 34, and a free end of this strip is bent radially to the hub to form a hooked portion 33a by which the hook 29b may be held in "cocked" position, so that no tightening effect is produced on the sandpaper strip 21.

The latch arm 29 is preferably so located that when the spring tightening means is rotated to the "cocked" position, as hereinafter described, the latch falls by gravity into engagement with the hooked portion 33a of the strap member 33. A "hump" or raised portion 29b is preferably provided on the latch arm 29 to ride on the lip or flange 11e during the first portion of the travel to "cocked" position of the latch to prevent the hooked end thereof from striking or becoming fouled on spokes 11b or hub 11a or, in fact, on any part of the machine.

A coiled torsion spring 36 is located within the chamber 35 formed by the inwardly turned edge 26a of the disc 26, and this coiled spring 36 is secured at its inner end to the boss 28a, which is a part of the flange or plate-like member 28, and at its outer end to the flange 26a of the disc 26. The spring is so coiled and flexed that rotation of the disc 26 in a counter-clockwise direction is induced when the latch 29b is released from the hook 33a. It is this spring 36 which tightens the sandpaper strip 21 on the drum. The end of the sandpaper strip 21 is secured to the disc by means of a U-shaped boss 37, a clamping strap 38, and screw 39, the screw 39 serving to clamp the strap 38 against one arm of the boss 37, and to thus engage the sandpaper strip against the other arm of the U-shaped boss.

A helical spring 40, received on the screw 39 between the boss 37 and the clamping strap 38, facilitates the insertion of the end of a sanding strip into the clamp.

It will be noted that the clamping strap 38 is bent or hooked on one end, as shown at 38a. This bent portion of the clamp is adapted to come to rest against the shoulder 11d of the sanding drum 11c if the latch member 29 is out of engagement and if there is no sanding strip in place, or if the sanding strip breaks.

In use, the spring tightening means is rotated until it is in the latched position shown in Figure 2. The "trailing" tip 21a of the sanding strip 21 is secured to the spring tightening means by means of the clamping means 37, 38 and 39. If the operator then releases the latch 29b from the hook 33a, the disc 26 will rotate because of the biasing effect of the helical spring 36 to tighten the sandpaper strip 21 on the drum 11. If, however, as is frequently the case, the operator does not understand or forgets that the latch 29 must be released, and starts up the machine, the weight 29a will be biased outwardly or radially by centrifugal force as the drum picks up speed. Before top speed is reached, the centrifugal force will cause the latch 29b to be disengaged from the hook 33a to thus release the disc to permit it to function in tightening the strip 21.

It is apparent, then, that by means of my invention, the operator may secure a sandpaper strip to the drum of a sander or the like without having to manually hold the securing device against the force of the self tightening spring, and that release of the self tightening device, to permit it to function, is automatic on starting the sander and is operable whether or not it is released by the operator.

The position of the stretching device, when in loaded position, makes it impossible to secure the sanding paper on the drum unless the device is in "cocked" position.

Although I have described a specific embodiment of my invention, it is apparent that modifications thereof may be made by those skilled in the art. Such modifications may be made without departing from the spirit and scope of my invention as set forth in the appended claims.

I claim as my invention:

1. In a device of the character described including a drum and a sanding strip, spring means for tightening the sanding strip on the drum, a latch means for holding the tightening means in stressed condition while the sanding strip is applied, and weighted means operable by centrifugal force to release the latch means as soon as the drum is rotated at a speed approaching normal operating speed.

2. In a sanding machine including a sanding drum, a take-up member pivotally attached to the sanding drum, spring means connected therewith, a clamping means for clamping a sandpaper strip to the take-up member, a latch member for holding the spring means in stressed condition, and a weight co-operatively mounted with the latch means to throw the latch means out of engagement by centrifugal force when the drum is rotated.

3. A sandpaper clamping and tightening means for use on a sanding drum, comprising a disc-like member, means for rotatably mounting said member near the end of the sanding drum, a torsion spring mounted between the disc-like member and the drum, means for clamping a sanding strip to the disc-like member near the periphery thereof, means for latching the disc in inoperative position, and means for releasing the latching means.

4. In a sanding machine including a rotatable drum, means for securing a sanding strip to the periphery of the drum, said means including a pivotally mounted clamp for gripping one end of the strip, spring means for biasing the clamp in one direction to tighten the strip, latch means for holding the clamp in inoperative position against the action of the spring, whereby the strip may be tightened on the sanding drum by releasing the latch after the end of the strip has been secured by the clamp, and a weighted member, comprising part of the latch means, so disposed as to be actuated by centrifugal force during rotation of the drum to fly outwardly and disengage the latch if the latch has not already been disengaged manually.

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