

R. H. HOWARTH.
 PORTABLE DUPLEX GRINDER.
 APPLICATION FILED JAN. 6, 1913.

1,061,843.

Patented May 13, 1913.

2 SHEETS-SHEET 1.

Fig. 1.

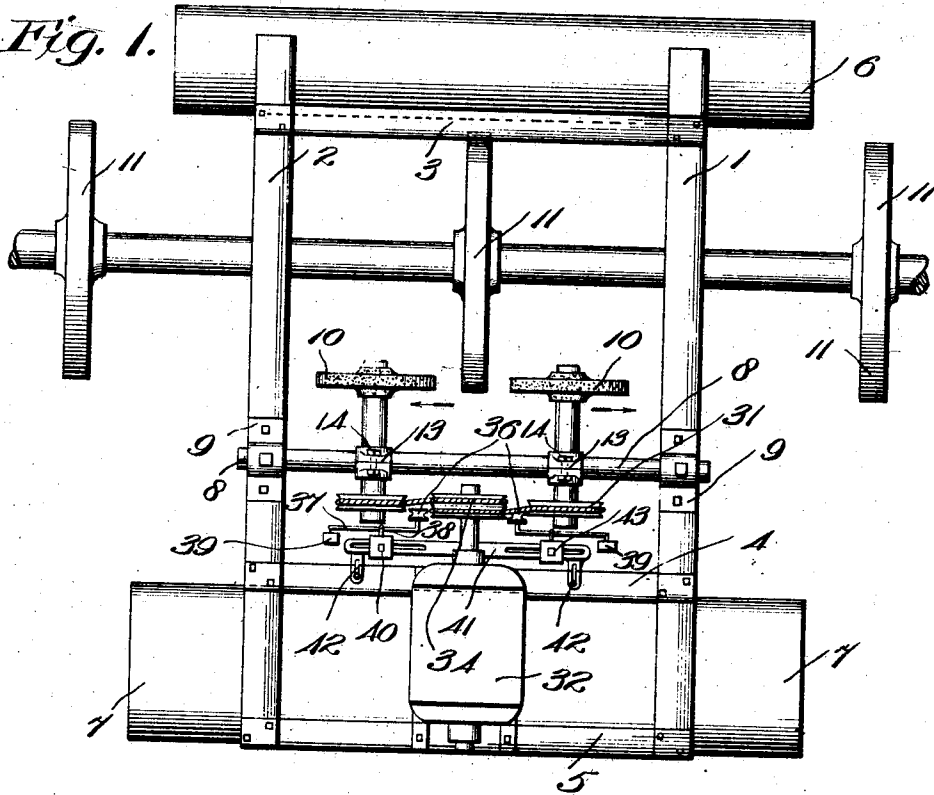
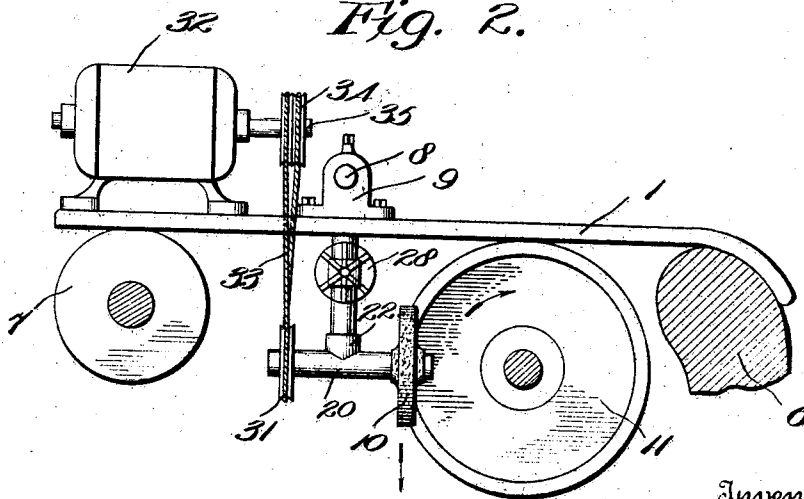


Fig. 2.



Witnesses
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2 SHEETS—SHEET 2.

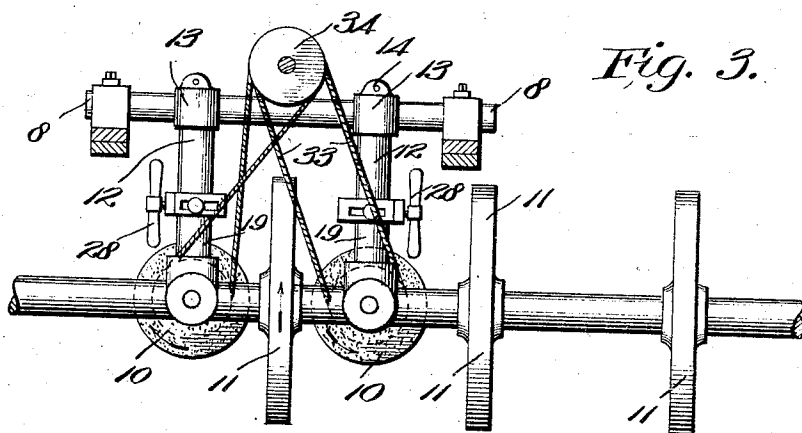


Fig. 3.

Fig. 6.

Fig. 4.

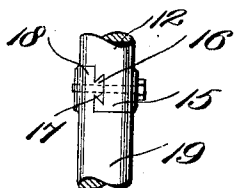
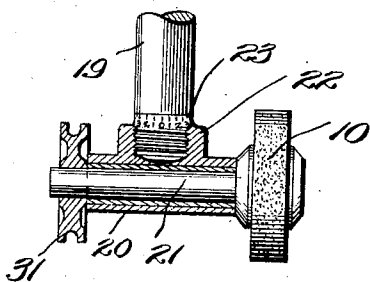


Fig. 5.

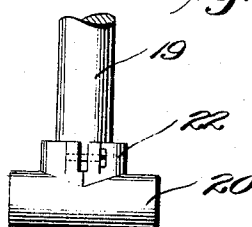


Fig. 8.

Fig. 7.

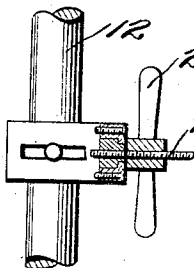
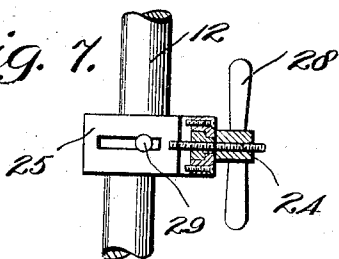
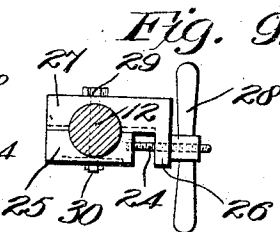


Fig. 9.



Witnesses

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PORTABLE DUPLEX GRINDER.

1,061,843.

Specification of Letters Patent.

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Application filed January 6, 1913. Serial No. 740,494.

To all whom it may concern:

Be it known that I, ROBERT H. HOWARTH, a citizen of the United States, residing at Rothschild, in the county of Marathon and State of Wisconsin, have invented certain new and useful Improvements in Portable Duplex Grinders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to apparatus for grinding the slitter knives of a paper machine or rewinder, and has for its purpose to provide a grinding machine which will be capable of properly grinding uniformly both edges of a slitter knife simultaneously; and which may be readily moved to the different slitter knives of the same machine, and from one machine to another whereby to avoid the necessity of removing the slitter knives from the shaft on which the same are mounted.

The invention has for its further purpose to provide a grinding machine of the type above stated wherein the grinding elements may be readily set to different positions or removed from position; one wherein the entire construction employs but few parts; and which may be operated by ordinary skilled labor.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views:—Figure 1 is a top plan view of the machine complete and in operative position on a paper machine; Fig. 2 is a side elevational view thereof; Fig. 3 is a front elevational view showing the grinding disks and their associated parts, and the slitter knives of the paper machine; Fig. 4 is a detail view, partly in section, of one of the grinding disks; Fig. 5 is a detail view in elevation showing the journal box for the shaft of the grinding disk. Fig. 6 is a detail view showing the connection between the parts of the hangers which supports the grinding disk; Fig. 7 is a detail view, partly in section, showing the adjusting device for the hanger; Fig. 8 is a view similar to Fig. 7,

showing the parts in different positions; and Fig. 9 is a top plan view of the parts shown in Figs. 7 and 8.

Referring to the construction in detail, the grinding machine consists of a suitable supporting frame comprising side members 1 and 2, and cross members 3, 4 and 5, said frame being mounted on the spreader 6 and guide roller 7 on the paper machine or rewinder. A shaft 8 is mounted in suitable bearings 9 on the frame and supports a pair of hangers which carry each an emery grinding disk 10, said disks adapted to be disposed to opposite sides of the slitter knives 11 when in operation. Each of said hangers consists of a bar 12 having a split head 13 that is clamped to the shaft 8 through the medium of a bolt 14, whereby said bar may have swinging and slidable adjustment and secured in set position on said shaft 8.

The lower end of each bar 12 is formed with a bearing element 15 that is formed with a channel way of dove-tail cross section 16, and within which is mounted a dove-tail head 17 formed on the bearing member 18 of an arm 19. The arm 19 has screw-threaded on the lower end thereof a journal bearing 20 for the shaft 21 of the grinding disk 10, and the threaded collar 22 of said journal bearing is split (see Fig. 5), whereby said grinding disk may be adjusted and secured in different set positions with respect to the cutting edge of the slitter knife 11 of the paper machine. To determine the position for setting the grinding disks the arms 19 of their respective hangers are each marked with a suitable scale 23, which in connection with the suitable point marked on the collar 22 indicates the angle at which the shaft 21 is set. By reason of having this scale in each of the hangers of the grinding disks, it will be readily seen that both of said disks may be accurately set for sharpening the opposed cutting edges of the slitter knives.

The means for adjusting the hanger arm 19 with respect to the hanger bar 12 consists of a screw rod 24 secured at its inner end to the bearing member or block 25 and having threaded engagement with an extension 26 formed on the bearing member or block 27. A hand wheel 28 is provided for adjusting the screw rod 24 and a tightening bolt 29 having a nut 30 serves for securing the

member 25 in set position. By the provision of this adjusting means the grinding disk together with its shaft and driving pulley 31 may be finally adjusted toward or from the slitter knife as desired. A motor 32 is mounted on the supporting frame and is adapted to drive the grinding disks through the medium of the ropes or belts 33 which ride on the pulleys 31 and 34 of the disk shafts 21 and motor shaft 35, respectively.

The driving ropes or belts 33 are at all times kept under proper tension through the medium of take-up devices, of which there is one for each belt. Each of said devices consists of a grooved pulley 36 engaging with its respective driving rope and mounted on an arm 37 which swings loosely on a stud 38, and has a tensioning weight 39. The stud 38 is carried by a slide 40 which is mounted on the slotted bar 41, and said bar 41 is adjustably mounted through the medium of slotted arms 42 on the cross member 4 of the machine supporting frame. Each of the slides 40 is provided with a securing bolt 43 which engages with a slot of the bar 41 and is adapted for securing said slide in adjusted position.

In the application of the machine for grinding the slitter knives of a paper machine the frame is rested upon the spreader 6 and guide roller 7 of the paper machine as in that manner illustrated in Fig. 2. The emery disks 10 are then adjusted on their respective hangers to bring their grinding surfaces into contact with the cutting edges of the slitter knife 11, and such adjustment is then secured by the means heretofore stated. The motor 32 is then operated to rotate the disks 10 and simultaneously therewith a slitter knife being ground is turned through the medium of the shaft on which it is mounted. The hangers are then adjusted to remove the grinding disks when the machine is free to be moved bodily, by sliding along the guide roller and spreader, to bring the grinding disks to be disposed on opposite sides of the slitter knife 11 to be ground. The machine in its entirety may be lifted from one paper machine and placed on another as shown in Fig. 2, when the above-described operations may be again performed.

It is obvious that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of my invention, and therefore I do not wish to be limited to such features except as may be required by the claims.

What I claim is:—

1. In a grinding machine, the combination of a support; a hanger mounted on said support and comprising a swingingly-mounted bar, an arm slidably mounted on said arm; means for sliding said arm and securing the same in different set positions, and a journal bearing rotatably mounted on said arm; a shaft journaled in said journal bearing; a grinding disk mounted on said shaft; and a motor connected to drive the shaft of said grinding disk, substantially as described.

2. In a grinding machine, the combination of a support; a shaft mounted on the support; a bar slidably and swingingly mounted on said shaft; an arm having a dove-tailed slidable connection with said bar; a journal bearing rotatably mounted on said arm, a shaft journaled in said bearing; a grinding element mounted on said shaft; and a motor connected to drive the shaft of said grinding element, substantially as described.

3. In a duplex grinding machine, the combination of a support; a shaft mounted on said support; a pair of hangers mounted on said shaft; a pair of grinding disks mounted on said hangers; means for imparting universal adjustment to said grinding disks; a motor mounted on said support; and driving connections between said motor and said grinding disks.

4. In a portable duplex grinding machine, the combination of a rectangular frame; a shaft secured in bearings on said frame; a pair of hangers swingingly mounted on said shaft; said hangers comprising each a bar having a dove-tailed guideway formed therein, an arm having a dove-tailed head slidably mounted within said guideway, an adjusting screw mounted on said bar and connected with said arm for adjusting the same, and a bolt passing through said arm and bar for securing the arm in different set positions; journal bearings adjustably mounted on the lower ends of said hangers; grinding disks journaled on said journal bearings; and a motor mounted on the frame and having driving connections with said grinding disks.

In testimony whereof, I affix my signature, in presence of two witnesses.

ROBERT H. HOWARTH.

Witnesses:

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NATHEAN WALTERS.