Sept. 13, 1927. 1,642,171

W. E. REAVIS

BOOK SANDER

Filed Sept. 19, 1925

Fig. 1.

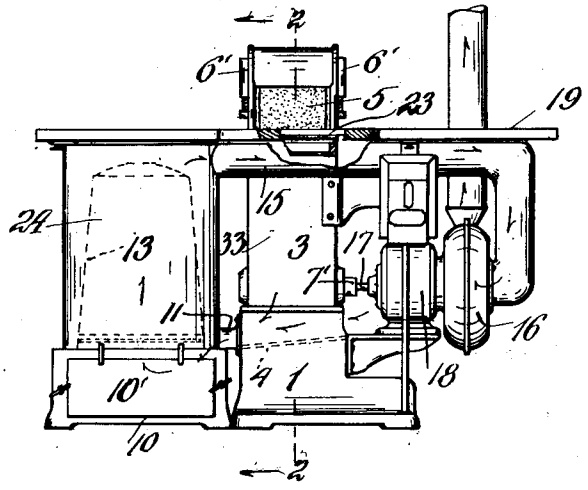


Fig. 2.

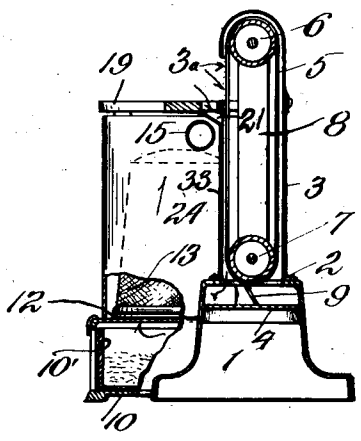


Fig. 4.

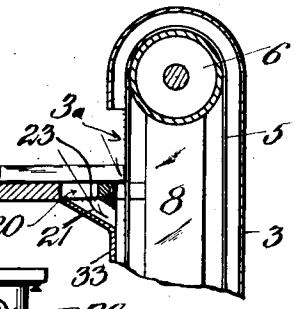


Fig. 3.

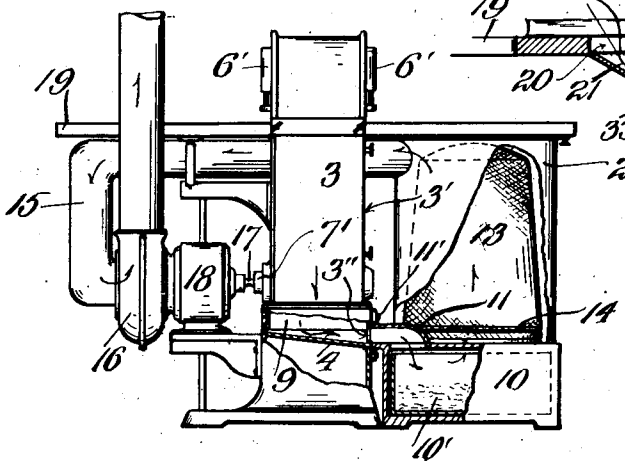
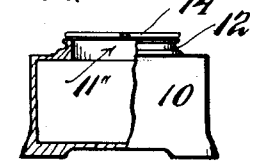


Fig. 5.



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ATTY.

Patented Sept. 13, 1927. 1,642,171

UNITED STATES PATENT OFFICE.

WINFRED ELMO REAVIS, OF LOS ANGELES, CALIFORNIA.

BOOK SANDER.

Application filed September 19, 1925. Serial No. 57,342.

My invention relates to a means for trimming signatures and it has especial reference to a device for removing surplus material from the edges of signatures whether in loose form or bound together and the main object of the invention is to provide a device of this character by which a removal of material from signatures may be accomplished speedily and economically.

Other objects are to provide a simple apparatus by which the least possible amount of paper may be removed from signatures, by which uneven edges may be trimmed or corrected and in which the removed particles of paper and dust incident on the removal are prevented from being scattered about and blown into the room in which the apparatus is operating.

Other objects will appear from the subjoined specification in connection with the accompanying drawing which illustrates a preferred form of embodiment of the invention, and in which

Fig. 1 is a front perspective view showing my invention.

Fig. 2 is a vertical section on line 2—2 Fig. 1 looking in the direction of the arrow.

Fig. 3 is a rear view, partly broken to show interior construction.

Fig. 4 is an enlarged fragmentary sectional view showing the work table and belt and

Fig. 5 is an elevation, partly in section of the dust case.

My invention, broadly considered, comprises a signature abrading means in connection with a means for removing and collecting the abraded particles and incident dust. In particular, the invention is shown as comprising a hollow base 1, upon which is secured in any desirable manner, as by bolts 2, a housing, which is shown as constituting substantially a chute 3, having free communication at the bottom thereof with the base 1, which, as shown in Figs. 2 and 3, is provided with a transverse floor 4 inclined to the horizontal for purposes which will appear later. Within the housing or chute 3 is an endless sand belt 5 mounted for revolution upon an upper roller 6 and a lower roller 7, which are respectively journaled in roller bearings 6′ and 7′ of any approved type, the upper bearings 6′ being adjustable to tauten the sand belt 5. These bearings 6′ and 7′ are mounted in upright supports 8 and 8′ within the housing 3, which is provided with a detachable side 3′ for the convenient and quick removal of the belt 5 when necessary. At the bottom of the belt 5 and in close proximity thereto is preferably placed a deflecting plate 9, extending horizontally of the housing 3 and at an angle to the vertical. This deflector plate 9 is provided to divert the travel of the dust particles and paper fragments and to prevent them from being drawn upwardly by the belt and suction incident upon its revolutionary speed. These particles of whatever nature and form they may be, are readily deflected by the plate 9 and caused thereby to deposit upon the inclined floor 4 from which their removal continuously is effected by a current of air drawn into the apparatus by the means presently described. I provide a number of holes 1′ in the side 1ª of the hollow base 1 for the purpose of causing air to be drawn into and through the base 1 at that point where the deposit of the particles occurs. In this wise, the floor 4 is constantly kept clean of dust and paper or thread fragments. The bottom of the chute or housing 3 is provided with a lateral opening 3″, by which communication is established between said housing 3 and a case 10. For this purpose the case 10 is preferably formed with a hollow flanged extension 11 providing a passageway from the housing 3 into the case 10. By means of bolts 11′, this flanged extension is connected with the housing 3 at the point where the lateral opening 3″ is provided. Slidable in the case 10 is a drawer 10′ into which the dust and other accumulations are gathered for subsequent disposition. The top of the case 10 is formed with an opening 11″, defined and bordered by an annular upstanding flange 12 over which is arranged to be fitted and secured a bag 13 of any suitable textile material. When this bag 13 is inflated by the air drawn through the same the particles removed by the sander, are collected in this bag which sifts them from the air. Upon deflation the bag 13 collapses, automatically emptying itself of its contents which are collected in the drawer 10′. The bag is prevented from falling into the drawer 10′ by cross members 14, which span the opening 11 in said case 10. Surmounting the case 10 is a chamber 24 which is bolted or otherwise secured to the top of said case, and which is

of an area sufficient to permit a free movement of the bag 13. This chamber is connected by a pipe 15 with an air exhaust 16 by which a steady current of air may be drawn through the apparatus and eventually discharged into the room, free from dust and any other undesirable accompaniment. The air exhaust is directly connected with one end of the shaft 17 of a motor 18, and the lower roller 7 over which the sand belt is extended is directly connected with the other end of the motor shaft 17, whereby the exhaustion of air through the apparatus is always synchronous with the operation of the sanding belt.

A support for the signatures may be provided, and this support may comprise a work table 19 disposed in proximity to the sand belt 5. For the purpose of affording convenient access to the sand belt 5, the housing 3 is provided with an opening 3^a, which exposes only so much of the belt as is needed for operation upon the signatures, and for the purpose of enabling the operator to hold the signatures and guide same in relation to the sand belt, the table 19 is provided with an opening 20, Fig. 4, for accommodation of the operator's fingers or other members while grasping the work and guiding it against the sand belt. The upper end of the front wall 33 of the housing 3 is formed preferably with a throat 21 with which the opening 20 in said table 19 is in direct communication, and which throat 21, leads directly into the chute 3. Through this opening 20 in said table 19, such quantity of dust and paper particles which are loosed by the sand belt and fail to be carried into the chute 3 through the space between the work table 19 and the belt 5, are drawn through the throat 21 into the chute 3 and no dust or particles are scattered about outside the channels through which the air must pass. A screen or other perforate means 23 is preferably provided across the throat 21, for the accommodation of the operator's fingers when gripping a book, without impairing the free ingress of air.

In practice, the operator, taking hold of the ends of signatures, places the same over the opening 20 in the work table 19, while his fingers are conveniently accommodated in the opening 20. By moving the signature relative to the traveling sand belt 5, the desired trimming of the edge may be effected neatly, and speedily. At the same time, the fragments or particles removed are effectively prevented from being disseminated by the suction maintained by the air exhaust.

What I claim, is:

1. A device for removing surplus material from the edges of book signatures, comprising a housing, a signature support thereon having an opening therein communicating with said housing and arranged to accommodate the operator's fingers holding a signature, an endless abrading belt operable within said housing, said housing having an opening near the top thereof exposing a portion of the belt at the signature support and provided near the bottom thereof with a plate inclined to the horizontal, a deflecting plate extending horizontally of said housing and inclined to the vertical to prevent abraded particles from being drawn upwardly by said belt, a dust chamber, a connection between said housing and dust chamber, a normally collapsed, self-emptying screen bag within said chamber, means for supporting said bag when collapsed, and means for creating a suction about said belt and through said screen to inflate said screen bag and collect dust particles therein while said screen bag is inflated.

2. A device for removing surplus material from the edges of book signatures comprising a housing, a signature support thereon having an opening therein and arranged to accommodate the operator's fingers holding a signature, an endless abrading belt operable within said housing, said housing having an opening in line with said signature support for exposing a portion of the belt, a dust chamber, means for establishing communication between said housing and dust chamber, a self-emptying, normally collapsed screen bag within said chamber, means for supporting said screen in collapsed condition above the bottom of said chamber, and means for creating a suction of air about and through said screen to inflate same and collect dust particles therein while thus inflated.

In testimony whereof I have set my hand.

W. ELMO REAVIS.