March 6, 1945. B. LEV 2,370,865

MECHANISM FOR CAPTURING FREED LINT AND OTHER PARTICLES

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Fig. 2

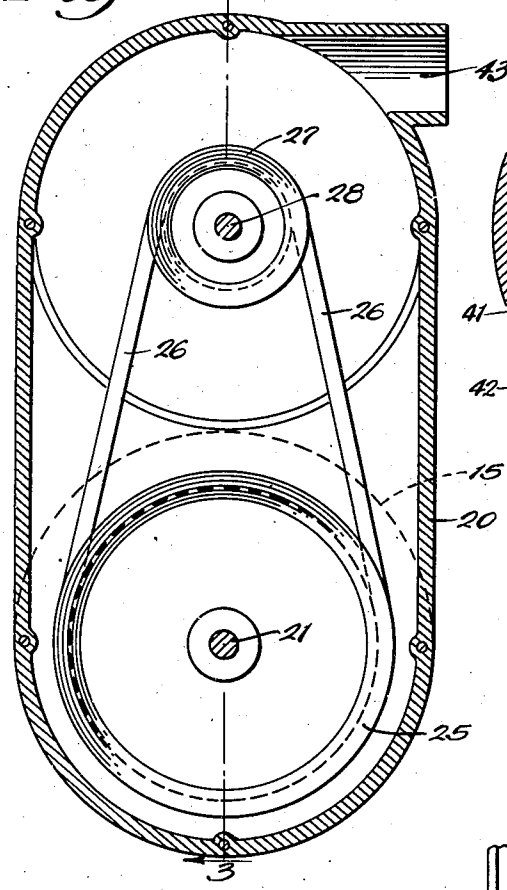


Fig. 3

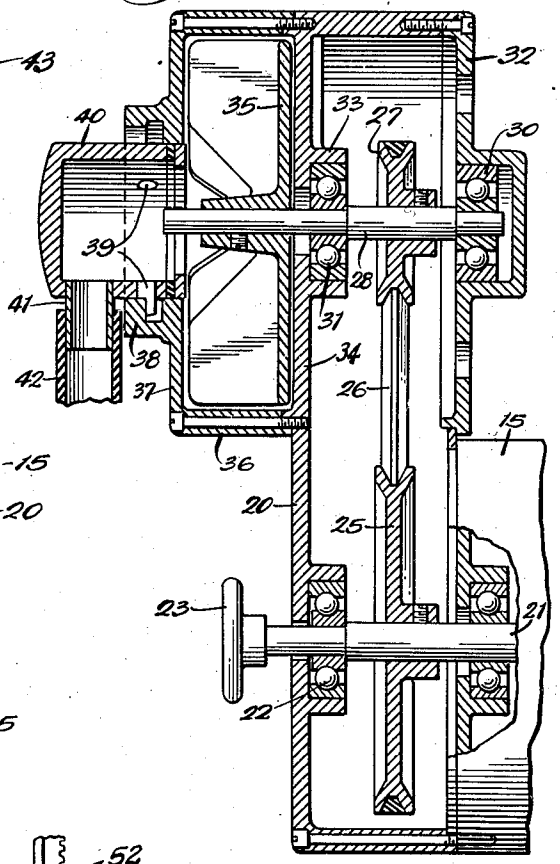
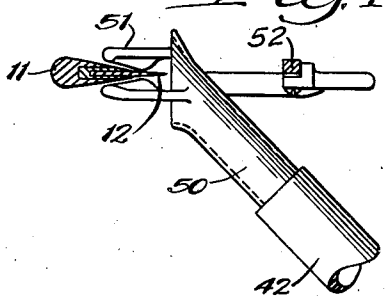


Fig. 4



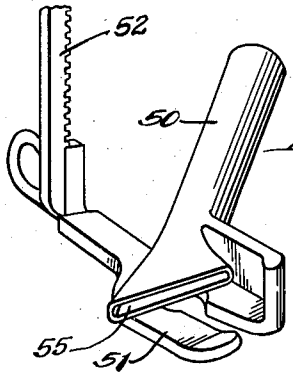


Fig. 5

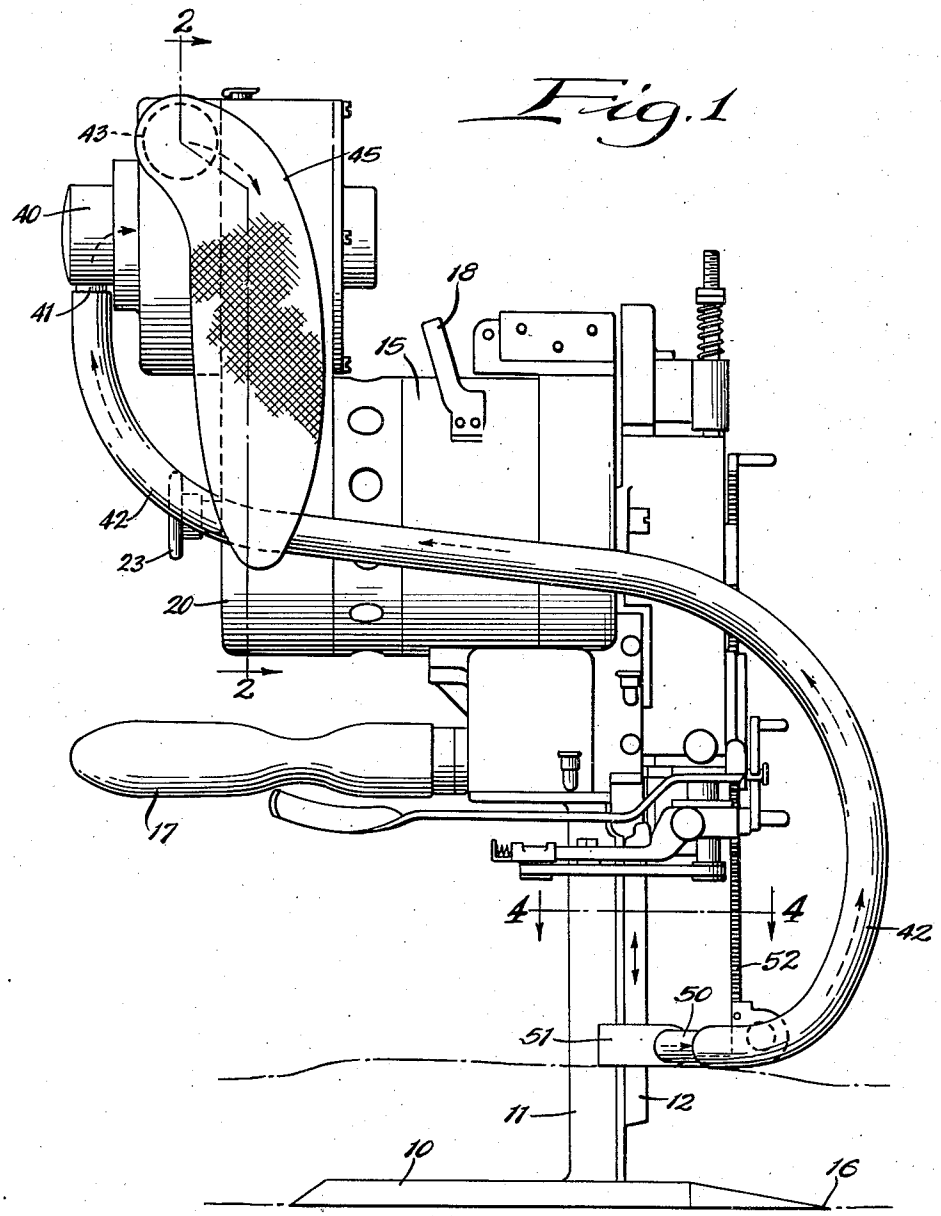
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MECHANISM FOR CAPTURING FREED LINT AND OTHER PARTICLES

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Fig. 1



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MECHANISM FOR CAPTURING FREED LINT AND OTHER PARTICLES

Benjamin Lev, Chicago, Ill.

Application April 19, 1944, Serial No. 531,844

3 Claims. (Cl. 30—124)

This invention relates to a device for capturing and disposing of lint or other loose particles that are freed from a fabric pile as the result of a cutting operation. More particularly, the present improvements are concerned with the addition to a conventional fabric cutting machine of a lint capturing mechanism operating on the vacuum principle whereby the freed lint is drawn into a mouthpiece adjacent the cutting knife, and thence through a conduit into a collecting receptacle. The operating parts for such a system include a take-off drive from the motor which operates the cutting knife, the mounting of such a drive upon means which are attached to and supported by the motor casing, and the provision of an impeller in connection with the take-off drive, the impeller being located in a chamber so that lint and other particles passing therethrough will be educted directly through a discharge opening into a collecting receptacle. Also, all the components of such a system are so mounted upon the cutting machine as not to interfere in any way with its normal operation during which it is guidingly moved through a pile of fabrics, and not to interfere with adjustment of its presser foot which is normally rested upon the top of the fabric pile under treatment. The benefits and advantages to attendants and workmen of capturing and disposing of freed lint needs no elaboration; the menace to health of such particles when loose in the air surrounding a fabric cutting machine is such that any solution, partial or otherwise, of the problem must be acclaimed a true blessing.

These highly desirable ends are effectively accomplished by the mechanism illustrated in the accompanying drawings wherein:

Figure 1 is a side elevation of a fabric cutting machine equipped with the present lint capturing means; Fig. 2 is a detail in vertical section, taken on line 2—2 of Fig. 1; Fig. 3 is a similar view, taken on line 3—3 of Fig. 2; Fig. 4 is a horizontal section taken on line 4—4 of Fig. 1; and Fig. 5 is a detail in perspective of the presser foot with induction mouthpiece attached.

The fabric cutting machine, here shown, may be conventional to the extent of having a base 10 supporting an upstanding post 11 upon which is mounted a vertically reciprocable knife 12 motor-operated by suitable means housed with a casing 15. The forward edge of the base may be chamfered at 16 to promote advance of the cutting machine through a pile of fabrics that are to be cut, usually in accordance with a desired pattern. A handle 17 is extended rearwardly at a point under the motor casing to assist in guiding the cutting machine through these movements, and at the casing top is affixed a lifting handle 18 whereby to facilitate portability of the machine.

The lint capturing mechanism of this invention comprises a main housing 20 which may be built on or affixed to the rear end of the motor casing, this housing being upwardly extended therefrom as shown in Figs. 1 and 3. The motor shaft 21 which is extended on into the housing is rotatably supported near its end in a ball raceway 22, the shaft continuing on through the housing for projection therebeyond where its end is fitted with an adjusting wheel 23. Carried fast on the shaft is a pulley 25 over which is trained a transmission belt 26 running over a second pulley 27 that is affixed to a driven shaft 28 in the upper part of the housing. This driven shaft is journaled for rotation in ball raceways 30 and 31, the former carried in a bearing plate 32 that is detachably mounted on the housing on its forward side and the latter in a seat 33 that is provided on the wall 34 of the housing opposite thereto. The driven shaft which is extended rearwardly through an opening in this housing wall 34 carries fast on its outer end a blower having an impeller 35 of approved character, this blower being encased within a separate chamber 36 that is detachably mounted on the housing 20. The outer wall 37 of the blower chamber is formed with a large axial opening surrounded by cam devices 38 with which may cooperate elements 39 that project radially from a cap 40 in whose periphery is a hole from which is extended a nipple 41 with which a flexible conduit 42 is in connection at one end. In operation, the blower will be driven, preferably at a speed much greater than that of the motor shaft itself, to create in its axial region a minus pressure so that loose material drawn through the conduit into the cap will be forcibly discharged through a lateral opening 43 in the blower chamber (see Figs. 1 and 2) for deposit within a collecting receptacle such as a bag 45 that is operatively and releasably connected thereto at that point.

The conduit extends from the cap to connect with a fitting 50 which joins with a bifurcated presser foot 51 that is mounted for vertical adjustment upon the post 11 to rest upon the top of the fabric pile that is to be cut. As by a ratchet bar 52 which extends vertically from the presser foot to cooperate wtih a suitable detent (not shown), the presser foot may be held in any desired adjusted position in straddling relation to the knife. The fitting 50 is formed to

provide a mouthpiece having an induction slot 55 which is wide and narrow, located close to and opposite the cutting edge of the knife (see Fig. 4) so as to draw in, by suction, the lint and other freed particles that are loose in the air at that point. Since in any cutting operation there is much lint that is freed into the air, those working near the machine find it a serious health menace, requiring oftentimes that they cease work after a few hours. In addition, such freed lint tends to work its way into the machine and its motor, with injurious results. These difficulties are overcome satisfactorily by use of the present mechanism which educts practically all the loose lint through the conduit and into the collecting receptacle for periodic disposal therefrom.

It will be observed that the parts entering into my lint capturing mechanism require no modifications in the cutting machine itself, nor is its presence, as an addition to the machine, any detriment or impediment in its operation. The take-off drive requires simply a longer motor shaft for connection with a transmission system whereby an impeller in a separate chamber may be operated at relatively high speed. All the parts are furthermore readily accessible for servicing or replacement, as occasion may require.

I claim:

1. For use with a fabric cutting machine in which is a presser-foot adjacent a reciprocable knife together with operating means therefor including a motor having a shaft and an enclosing casing—a lint capturing mechanism comprising a housing carried by the motor casing extended laterally thereof, the motor shaft being extended into the casing, a pair of pulleys within the housing one mounted fast on the motor shaft, a driven shaft, journaled for rotation in the housing, mounting the second pulley, a belt running over both pulleys to transmit rotary movements to the driven shaft, a blower operated by the driven shaft, means carried by the housing providing a chamber for the blower having inlet and outlet openings, a collecting receptacle at the chamber outlet opening, an induction mouthpiece carried by the machine at a point adjacent the knife, and a conduit interconnecting the mouthpiece and inlet opening of the blower chamber for conducting loose particles therethrough and into the collecting receptacle in response to minus pressure created by the blower.

2. For use with a fabric cutting machine in which is a reciprocable knife together with operating means therefor including a motor having a shaft and an enclosing casing—a lint capturing mechanism comprising a housing carried by the motor casing extended laterally thereof and formed with an opening at a point beyond the motor casing, a plate mounting a bearing removably affixed to the housing over its opening, to provide a closure therefor, the housing wall opposite the opening being provided with an opposite opening with a surrounding bearing, walls defining a chamber removably affixed to the housing wall traversed by the last named opening, a blower shaft journaled for rotation in both bearings and extended through the wall opening into the chamber therebeyond, the chamber walls being provided with an inlet opening opposite the shaft end and a discharge opening laterally of the chamber, a cap having a lateral opening removably affixed to the chamber to provide a closure for its axial opening, a blower carried by the blower shaft for rotation within the chamber, means within the housing providing a power transmission between the motor shaft and blower shaft whereby the blower is operated by the motor, an induction mouthpiece supported adjacent the reciprocable knife, and a conduit extended from the mouthpiece to the lateral opening of the hub to conduct lint to the blower chamber and out through its discharge opening.

3. For use with a fabric cutting machine in which is a reciprocable knife together with operating means therefor including a motor having a shaft and an enclosing casing—a lint capturing mechanism comprising a housing carried by the motor casing extended laterally thereof and supporting two companion bearings therein, there being a hole axially of the bearings through one wall of the housing at a point laterally of the motor casing and an enclosing chamber upon the opposite side of said wall, a blower shaft journaled for rotation in the bearings and extended into the chamber, a blower carried on the shaft for rotation within the chamber through whose walls inlet and outlet openings are formed, means providing a power transmission within the housing extending between the motor shaft and blower shaft whereby the blower is operated by the motor, a conduit leading from a point adjacent the knife to the inlet opening of the chamber adapted to conduct freed lint thereinto and out through the outlet opening, and separate means removably attached to the housing affording full opening access, when disconnected therefrom, to either the blower or to the shaft therefor.

BENJAMIN LEV.