

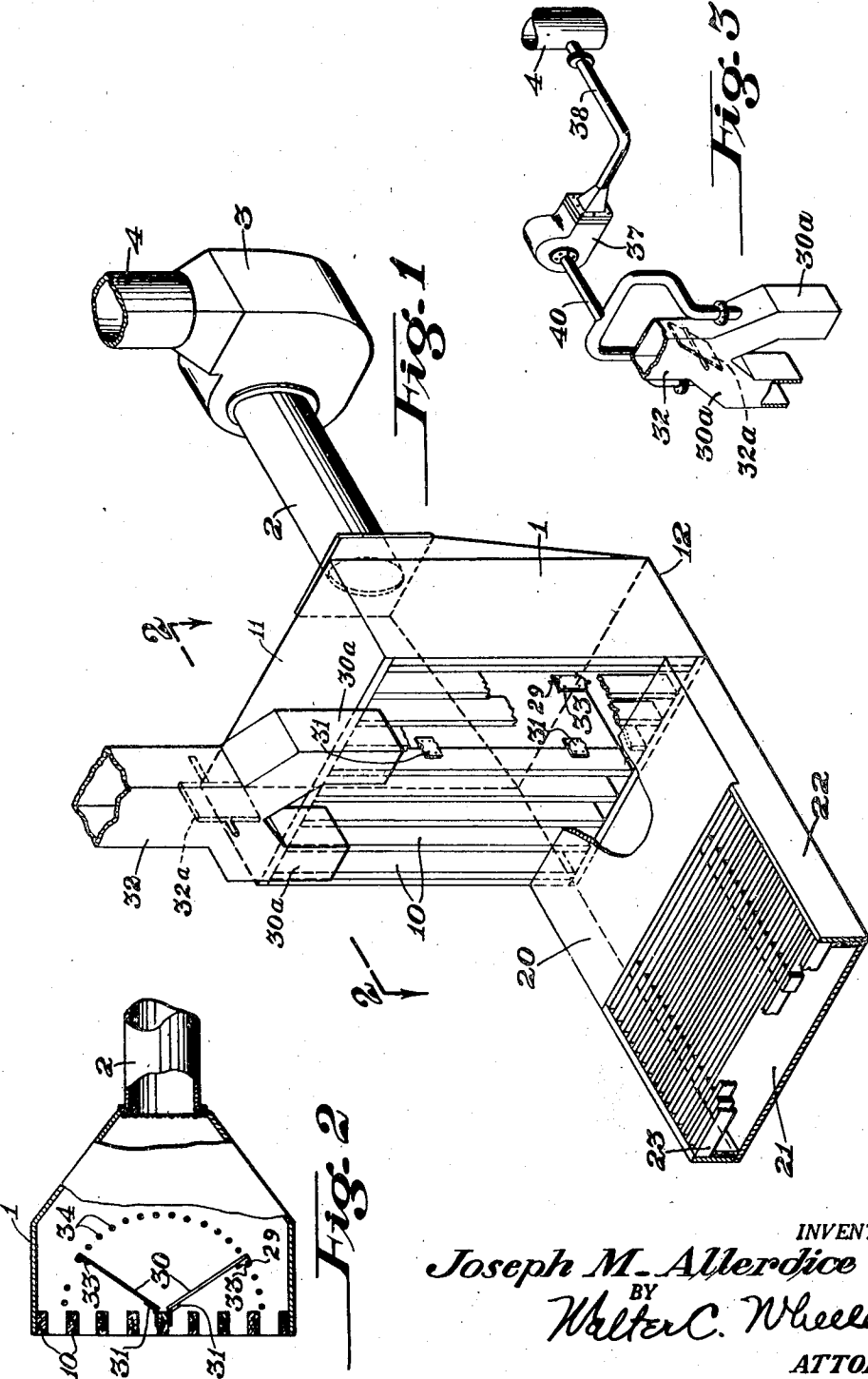
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DUST PREVENTING DEVICE FOR PACKAGING SUBDIVIDED MATERIALS

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DUST PREVENTING DEVICE FOR PACKAGING SUBDIVIDED MATERIALS

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1

This invention relates to improved devices for packaging articles, and especially to means for protecting the operators from dust inadvertently created during the packaging of articles in sacks.

Raw materials, bulky goods, grains and other materials which are subdivided in character are commonly put into sacks for shipment or storage. Many of these materials are associated with more or less dust to which certain humans are allergic. Such dust sometimes constitutes an industrial hazard which those engaged in the sacking of such materials desire to eliminate. It is therefore one of the objects of the present invention to provide devices for protecting workmen from dust issuing from such materials which are being sacked.

The foregoing and other objects of the invention will be apparent from the following description in which an embodiment of the invention, its principle of operation and the method of carrying out the invention are set forth and illustrated with reference to the drawing in which:

Fig. 1 is a view in perspective of a sacking device in which parts are cut away.

Fig. 2 is a partial cross sectional view of a damper arrangement, and

Fig. 3 is a view in perspective of an auxiliary ventilating arrangement.

Referring to Fig. 1, the sacking device comprises in general a working platform provided with an arrangement of ducts for eliminating dust from the working space, a header opening to the working space and said ducts, means for bringing the material to the working space where the sacking is performed and suction means for drawing ventilating air from the header. The working space is above the raised imperforate platform shown in Fig. 1 which forms a portion of the top of a horizontal flue having an inner opening communicating with the header 1. The header 1 is connected by the pipe 2 with the ventilating fan 3 which draws air from the header. The fan discharges through the pipe 4 which may lead to the atmosphere.

The header 1 is closed except for the outlet to pipe 2 and one upright side thereof which is provided with a grating or grill formed by the bars 10 which are preferably disposed vertically between the top member 11 and base member 12 of the header.

The loading platform 20 is the imperforate top portion of an elongated modified flue having a base member 21 and upright side members 22 which form three sides of the flue. The top of the flue comprises the imperforate loading platform

2

20 which extends outwardly from the grating in the header a distance sufficient for resting the bags or containers which are to be filled. Extending outwardly from the outer part of the platform 20 is a perforate area which may be formed by the slats 23 which are secured in place to the side members 22 by nails, screws or other suitable means. The flue underneath the slats 23 and imperforate loading platform 20 is open at the outer end to provide for raking out accumulations which are not carried into the header by the current of air. The inner end of the flue opens to the header and the ends of the bottom and side members 21 and 22 and the edge of the imperforate platform 20 are formed to abut tightly against the facing portions of the header.

The imperforate part 20 of the platform extends from the grilled face of the header outwardly. Its width is about the diameter of bags or containers to be loaded, but may be varied provided that dust occurring at or settling toward the bottom of a bag will be drawn into the header either by the current of air passing directly through the grill or by the air drawn around the edge of the platform 20 into the flue. Thus the imperforate platform 20 is proportioned so that a current of air will be maintained into the flue from a portion of its surface and from the remainder of its surface a current of air will pass directly through the grill for eliminating dust from the lower part of the working space.

The imperforate portion 20 of the platform is desirably made to be removable for facilitating in cleaning the flue and it is supported by the side members 22. The side members 22 are cut away so that the portions bordering the imperforate part of the platform are of less depth than the portions bordering the perforate part. This provides for maintaining the imperforate part of the platform with its upper surface flush with the surface formed by the upper edges of the slats 23, and in place between the shoulders thus formed in the side members 22 and the slots or grill 10 when the side members 22 are abutted against the header 1. A rectangular flue is thus formed which extends outwardly from the header. The upper edges of the slats 23 and of the side walls 22 form a perforate working area or platform extending outwardly from the imperforate area 20 for resting bags or cartons while adherent fines are disengaged from their surfaces. The finer of such adherent material is carried into the header through the flue while heavier portions fall through the perforate platform to

3

the bottom 21 of the flue, later to be raked out through the outer open end of the flue.

Above the platform 20, the branching conduit 32 or other means for conveying the material to be loaded or packaged terminate at convenient points. The bags or containers to be filled may be secured over the ends of the conduit branches or loading spouts 30a, or held underneath at a convenient distance. The lighter dust issuing from the tops or sides of the containers during the filling of the bags is drawn directly into the header through the slotted front of the header by the current of ventilating air.

The intake of ventilating air through the slotted face of the header and the flue can be regulated and modified if desired by providing means for restricting the flow of air through the grill or slotted front of the header. This may be done by various means such as a slide fitted in front of or in the rear of the slats 10 for obscuring a part of the opening, but a preferred device comprises a damper 30 which in a loading device designed for one container may be hinged at one side or in the middle. As shown in Fig. 2, the dampers 30 are supported on hinges 31 which are secured on the inner edge of the middle slat 10 of the header. The dampers are held in place by sliding rods 29 which are arranged to slide up and down in the guides 33. The lower ends of the rods 29 drop into openings 34 in the base 12 of the header and retain the dampers in place. A series of openings 34 are provided in semi-circular arrangement so that either damper 30 can be held at any desired angle. The arrangement shown in Fig. 1 can thus be varied from a double bag loader to a single bag loader by closing one of the dampers 30 and the other damper 30 can be moved to any desired position to vary the intake of air. A shut-off or damper 32a in the conduit 32 is used to regulate the supply of material to the bags.

It is sometimes desirable to remove dust or fine particles from the incoming material. An effective device for this purpose comprises a ventilating conduit 40 leading from the loading spout 30a of a supply conduit to an auxiliary exhaust fan 37 which discharges to the atmosphere through the pipe 38, either directly or through the discharge pipe 4. As the material is discharged from the supply conduit 32 to the loading spout 30a and the material tumbles into the container, a considerable amount of dust is raised. With the fan 37 in operation, a current of air is drawn from the container being loaded and through the partly filled loading spout. This diminishes somewhat the dust which otherwise would be forced from the container into the working space but which eventually would be eliminated for the most part by the current of air passing into header 1 between the slats 10. Instead of connecting the exhaust conduit 40 to an auxiliary fan, it may be connected to the main fan 3 or exhaust pipe 2.

The present invention provides a device which materially improves the working conditions in locations where dusty materials are put up in packages such as bags, and avoids an industrial hazard sometimes arising from such occupation.

In constructing the device, the flue may be made permanently attached to the header 1, but it is satisfactory to have the flue and platform detachably combined with the header. The abutting edges of the flue can readily be fitted to the facing members of the header to avoid

4

material loss in ventilation without providing means for fastening the flue and header together, but where other conditions cause the flue and header to separate, any desirable means can be provided to prevent such separation.

From the foregoing disclosure it will be recognized that the invention is susceptible of modification without departing from the spirit and scope thereof and it is to be understood that the invention is not restricted to the specific illustrations thereof herein set forth.

I claim:

1. In a packaging device, an air exhaust means and a header connected thereto; said header having one upright side provided with a grill, a loading platform having a perforate part and an imperforate part forming a top member of a horizontally disposed ventilating flue which connects with said header through said grill, upright side members forming the opposite upright walls of said flue and providing supports for said platform, the imperforate part of said platform having an inner edge abutting said grill and an outer edge adjoining the perforate part of the platform, said imperforate part of the platform being proportioned for providing a rest for packages to be filled and for permitting an air current over a portion of its surface toward its outer edge and through said flue, and an air current directly into said header from the remainder of its surface, and means terminating above said imperforate part of the platform for delivering material to be packaged.

2. A device in accordance with claim 1 which comprises means for regulating the intake of air through said grill.

3. A device in accordance with claim 1 which comprises a damper hinged on said grill and opening into said header, said damper having stop means mounted thereon for disposing it in positions for regulating the current of air passing through said grill.

4. In a packaging device, an air exhaust means and a header connected thereto; said header having one upright side provided with a grill, an imperforate loading platform forming a top member of a ventilating flue which connects with said header through said grill, upright side members forming the opposite upright walls of said flue and providing supports for said platform, said platform having an inner edge abutting said grill and being proportioned for providing a rest for packages to be filled and for permitting an air current over a portion of its area toward its outer edge and through said flue and an air current directly to said header from the remainder of its area, a conduit for delivering material to be packaged having a delivery spout above said platform, and a ventilating conduit connected to said delivery spout for eliminating dust from the material while it is being packaged.

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