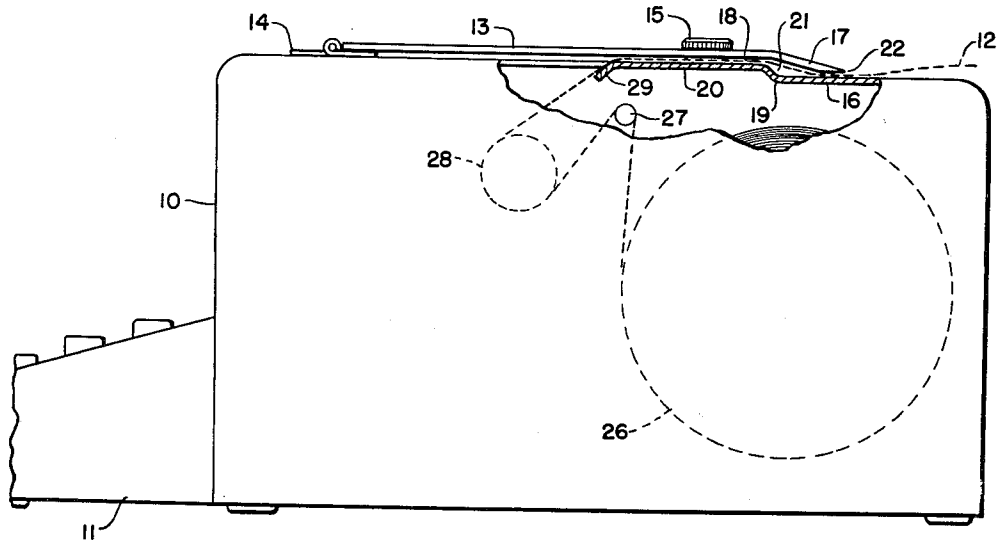
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PAPER EXIT DUST SHIELD

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PAPER EXIT DUST SHIELD

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This invention relates to a dust trap for material handling machines and more particularly to a dust trap for material handling machines at the point of egress or ingress of the material from or to the handling machine.

In business machines such as teletypewriters, wherein a printing operation is taking place interiorly of a covered machine and a paper record is exiting from the enclosed business machine, it is often desired to provide shielding of the interior parts of the teletypewriter from excessive dust or dirt carried or blown in with air that enters through openings in the cover, such as a paper exit slot. While the paper slot may be dimensioned close to the dimensions of the paper exiting from the teletypewriter, nevertheless the dimensions of a slot must be somewhat larger than the dimensions of the paper exiting from the slot, to minimize the frictional drag on the paper exiting from the machine. Therefore, it is necessary to provide shielding from the dust or sand borne by the air that may enter through the paper exit slot due to the lower pressure inside of the teletypewriter developed by the driving motor and cooling fan for the teletypewriter.

An object of the invention is to use a Venturi effect to precipitate foreign matter out of the air entering an enclosure.

Another object of the invention is to precipitate dust or dirt from air entering a slot through which a recording medium egresses or ingresses from or to a business machine.

Another object of the invention is to provide a precipitation chamber near the paper exit or entrance of an enclosed business machine to precipitate out and collect foreign matter carried by air entering the business machine.

The invention features a narrow passage through which a recording material enters or leaves a recording machine adjacent to and connected with a larger chamber for precipitating out the foreign material.

The invention also features a vertical wall in a large chamber against which the air bearing particles of solid material impinges to precipitate out the solid matter.

The invention consists of a covered business machine having a narrow slot substantially the size of the material that egresses or ingresses through the narrow slot, and a large chamber which is connected to the narrow slot and serves as a precipitation chamber for dust entering with the air through the narrow slot at a high velocity and passing into the large chamber at a greatly reduced velocity, whereby the dust borne by the air is precipitated out on the floor of the large chamber. The large chamber also has a vertical wall against which the dust-laden air will impinge to deposit out the dust before moving upwardly over the wall into a narrow paper channel on the other side of the large chamber.

Other features and advantages of the invention will become apparent from the following detailed description when considered in conjunction with the accompanying drawing which is a side elevational view of a teletypewriter according to the present invention in which a portion of the cover has been broken away to give a sectional view of the dust trap.

Referring now to the drawing there is disclosed the general outline of a teleprinter housing **10** or enclosure, as nearly dust proof as possible, encasing a conventional teleprinter for printing messages on a web or sheet of recording medium such as the paper **12**, and from

which protrudes the framework of a keyboard **11**. Manifestly, the web or recording medium could be any suitable recording media such as a paper tape, magnetic tape or plastic tape entering any type of business machine such as typewriter, tape punching machine or teleprinter, as the invention is not limited to the particular type of machine or recording media entering or egressing from the machine.

In the teleprinter housing **10** the paper exit cover **13** is of a clear plastic material that has one portion supported on a block **14** and that is secured near its other end to the dust cover or housing **10** by a thumb screw **15**. The rear portion of the paper exiting cover **13** has a downwardly curved portion **17** which ends a very slight distance above the dust cover **10** of the teleprinter. The end of the curved portion **17** of the paper exit cover **13** is spaced from the adjacent surface **16** of cover **10** by a distance only slightly exceeding the thickness of the paper **12** passing between this downwardly curved portion **17** and the adjacent cover surface **16**. In practice this dimension would range from approximately .015 to .032 inch for a sheet of paper. Of course, the paper exit cover **13** has side walls (not shown) which enclose the paper on its sides and provide a firm seal against the entrance of dust or dirt except through the opening **18** between the curved portion **17** and the housing **10**.

The paper supply is contained inside the housing **10** in the form of a roll **26**, from which the paper passes over a straightener bar **27**, and under and around a cylindrical platen **28**, at which point printing upon the paper occurs. The paper then passes over a guide lip **29**, between the exit cover **13** and a flat surface **20** of the housing **10** that is slightly elevated with respect to surface **16**, and out across the surface **16**. Interconnecting the lower and upper surfaces **16** and **20** is a slightly inclined surface or baffle **19** which forms with the paper exit cover **13** and the surface **16** of the teleprinter cover **10** a relatively large chamber **21** interconnecting a first restricted passage **18**, defined by exit cover **13** and surface **20** of housing **10**, and a second restricted passage **22** defined by the end of exit cover **13** and surface **16**, through which paper **12** passes.

In operation of the teleprinter the paper **12** will be traversing passage **18**, the large chamber or cavity **21** and then emerging through passage or orifice **22** or it might conceivably be entering at passage **22**, traversing the large chamber **21** and passage **18** to gain access to the interior of housing **10**. In any event, whether the paper **12** is entering or leaving the housing **10**, it will pass through a small cross-sectional area into a larger cross-sectional area and out a small cross-sectional area. Likewise, air, perhaps dust laden, may enter only through the small cross-sectional area of the passage or slot **22** and through the larger cross-sectional area of the chamber **21** into the small cross-sectional area of the channel **18**. The same mass of air moving into the teleprinter housing **10** through the slot **22** will be at a higher velocity as it enters slot **22** than it will be when it traverses the large chamber **21**, which has a greater cross-sectional area than the slot **22**. Thus, as the dust borne by the air enters at a high velocity through slot **22** into the chamber **21** its velocity will be greatly reduced according to the well-known Venturi effect, and the solid matter such as dust and sand will be precipitated out and fall to the floor of the chamber **21**. Outward movement of the paper **12** and the vibrations of the machine will tend to move the solid particles along the lower surface **16** of the teleprinter cover **10** out of the machine. Also, the high velocity air entering the chamber **21** and having its velocity reduced will impinge against the inclined wall **19** and this will also cause the precipitation of foreign matter and act as a barrier against the move-

ment of precipitated matter into the interior of the teleprinter.

Frequently the driving motors of teleprinters are provided with fans for cooling the motors, particularly when the teleprinters are enclosed in closely fitting covers. It is within the contemplation of the present invention that the air forced through such a motor by a cooling fan shall be directed through a duct to an exhaust part in the housing, and that a slot or passage 22 shall be the sole point of entrance for air drawn by the cooling fan, thus assuring the trapping of air drawn in by the fan as well as air forced in by wind or other external air currents.

Although only a specific embodiment of the invention is shown in the drawing and described in the foregoing specification it will be understood that invention is not limited to the specific embodiment described but is capable of modification and rearrangement and substitution of parts and elements without departing from the spirit of the invention.

What is claimed is:

1. In a printer having a dust proof cover, a dust trap comprising a paper guide plate attached to said cover and having a first portion adjacent to said dust-proof cover to form a narrow portal for the paper and any dust-laden air and a second portion spaced from said cover portion to form a dust trap for dust-laden air.

2. In a printer having an enclosing cover with stepped surfaces, a dust trap comprising a paper guide plate having a first portion adjacent one of the stepped surfaces of the cover to form a narrow exit for a sheet of paper and a second portion adjacent the other of the stepped surfaces but spaced from the first of the stepped surfaces of the cover to form a dust trap for dust-laden air that enters through said narrow paper exit.

3. In a teleprinter the combination of a dust proof cover having an upper paper bearing surface, a lower paper bearing surface, and a substantially vertical wall surface interconnecting said upper and lower paper bearing surfaces, and a paper guide plate spaced from and completely enclosing on three sides the paper supported on the upper and lower bearing surfaces and having a downwardly extending wall on the fourth side to almost engage the paper resting on said lower paper bearing surface of the dust proof cover and establish in cooperation with said surfaces an orifice for passage of the paper and a dust precipitation cavity connected to said orifice.

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