

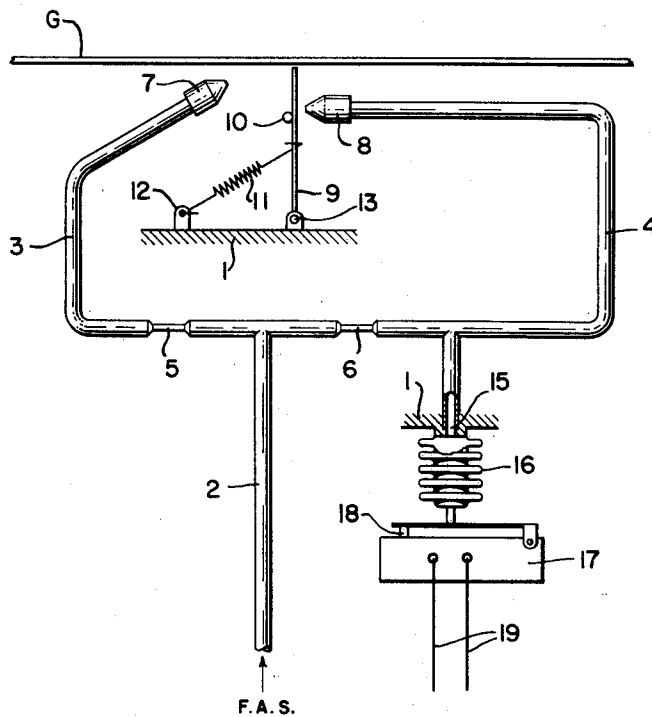
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F. D. DODGE

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CONTROLLER

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INVENTOR.
FREDERICK D. DODGE

BY *Arthur H. Swenson*

ATTORNEY.

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CONTROLLER

Frederick D. Dodge, Conshohocken, Pa., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a corporation of Delaware

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This invention relates to means for detecting the presence or absence of an object such as a plate of glass at a specific location such as a point on a roller conveyer.

It is an object of this invention to provide such a detector which comprises a jet nozzle supplying a jet of air directed so that when a plate of glass is present on the conveyer, the plate of glass deflects the jet of air and causes a flapper to move toward a relay nozzle and thereby vary the back pressure of the air controlled by the nozzle. The back pressure of the air so controlled may be used to actuate a pneumatic signal or the back pressure of the air may actuate an electric switch and thereby actuate an electric signal.

A better understanding of the present invention may be had from the accompanying drawing and descriptive matter in which is illustrated and described a preferred embodiment of the invention.

The single figure of the drawing is a diagrammatic or schematic showing of the device with parts shown in vertical cross section.

The detector of this invention comprises a base adapted to be secured in position by mounting holes or lugs (not shown). Formed in or attached to the base is a conduit 2 adapted for connection to a supply of air under pressure F.A.S.

Conduit 2 divides into two branches. One branch forms a jet nozzle 3 which may be connected to conduit 2 by a restriction 5, such as a cylinder having a bore of capillary cross section passing axially through it. At its tip, jet nozzle 3 has a second restriction 7, which may also be formed as a cylinder and cone having a bore of capillary cross section passing axially through it.

Relay nozzle 4 forms a second branch and is connected to conduit 2 by a restriction 6 and has a fourth restriction 8 at its tip.

A flapper or flat plate 9 is pivotally mounted at 13 on the base. Flapper 9 is biased away from relay nozzle 8 by a spring 11 connected at one end 12 to the base. A pin 10 limits the movement of flapper 9 away from relay nozzle 4.

The detector is adapted to be mounted adjacent a conveyer, such as a roller conveyer, in such a position that the jet of air issuing from the jet nozzle 3 is deflected by the sheet of glass G passing along the conveyer. When there is no glass on the conveyer, the jet of air from the jet nozzle 3 does not affect the flapper 9. If a plate of glass passes along the conveyer, it deflects the jet of air from the nozzle 3 and causes the jet of air to strike the left face of the flapper 9. The pressure of the jet of air so deflected is sufficient to cause the flapper 9 to move toward the relay nozzle 4 against the bias of the spring 11. This movement of flapper 9, which in practice is only a few thousandths of an inch, is sufficient to vary the pressure of the air escaping from the relay nozzle 4 through the restriction 8. This variation in the flow of air through restriction 8 varies the back pressure of the

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air in relay nozzle 4 between restrictions 6 and 8. The pressure of the air in relay nozzle 4 between restrictions 6 and 8 may be used to actuate a pneumatic indicator or recorder to signal the presence of a plate of glass on the conveyer.

Alternately, as shown in the drawings, the conduit 4 has an opening 15 communicating therewith. Opening 15 conducts the air in relay nozzle 4 to the interior of a flexible bellows or like movable member 16. Mounted adjacent the free or movable end of bellows 16 is an electric switch 17 having an actuating member 18 and a pair of terminals 19. Terminals 19 may be connected to leads which conduct electricity to an electric light or other signaling, indicating, or recording instrument.

Electric switch 17 may conveniently be of a compact, readily actuated type, such as those shown in U.S. Patent 1,668,974 to A. J. Mottlau; U.S. Patent 1,780,758 to H. G. Leupold; or U.S. Patent 2,612,368 to S. G. Ransome.

What is claimed is:

1. Means for detecting the presence or absence of a plate of glass on a conveyer, including, a jet nozzle adapted for connection at one end to a supply of air under pressure and adapted to expel a jet of air from its opposite end, a flapper pivotally mounted adjacent said jet nozzle and having its free end unaffected by said jet when a plate of glass is not present and moved by the deflected jet of air when a plate of glass is present, a relay inlet restriction adapted to be connected on its inlet side to a supply of air under pressure, a relay nozzle adapted to be connected to the outlet side of said relay inlet restriction, an outlet restriction mounted on the other end of said relay nozzle and cooperating with said flapper so that said flapper varies the flow of air which escapes through said relay nozzle, and an air conduit communicating with said relay nozzle between said restrictions and adapted to conduct the air at a pressure varied by said flapper to a point of use.

2. Means for detecting presence or absence of a plate of glass on a conveyer, including, a jet nozzle, a jet nozzle inlet restriction adapted for connection at one side to a supply of air under pressure and connected at its opposite side to said jet nozzle, the outlet end of said jet nozzle being adapted to expel a jet of air, a flapper pivotally mounted adjacent said jet nozzle and having a free end which is unaffected by said jet of air when a plate of glass is not present and which receives the jet of air deflected by the plate of glass when said plate of glass is present, a relay nozzle inlet restriction adapted for connection on its inlet side to a supply of air under pressure, a relay nozzle connected to the outlet side of said relay nozzle inlet restriction, an outlet restriction at the opposite end of said relay nozzle and cooperating with the free end of said flapper so that the movement of said flapper toward or away from said relay nozzle varies the pressure of the air in said relay nozzle between said restrictions, means biasing said flapper away from said relay nozzle, a pin limiting the movement of said flapper away from said nozzle, and a conduit connected to said relay nozzle between said restriction.

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