

Aug. 1, 1967

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3,333,355

COMBINED SAFETY AND EXHAUST HOOD FOR PRESSING MACHINE

Filed April 19, 1966

4 Sheets-Sheet 1

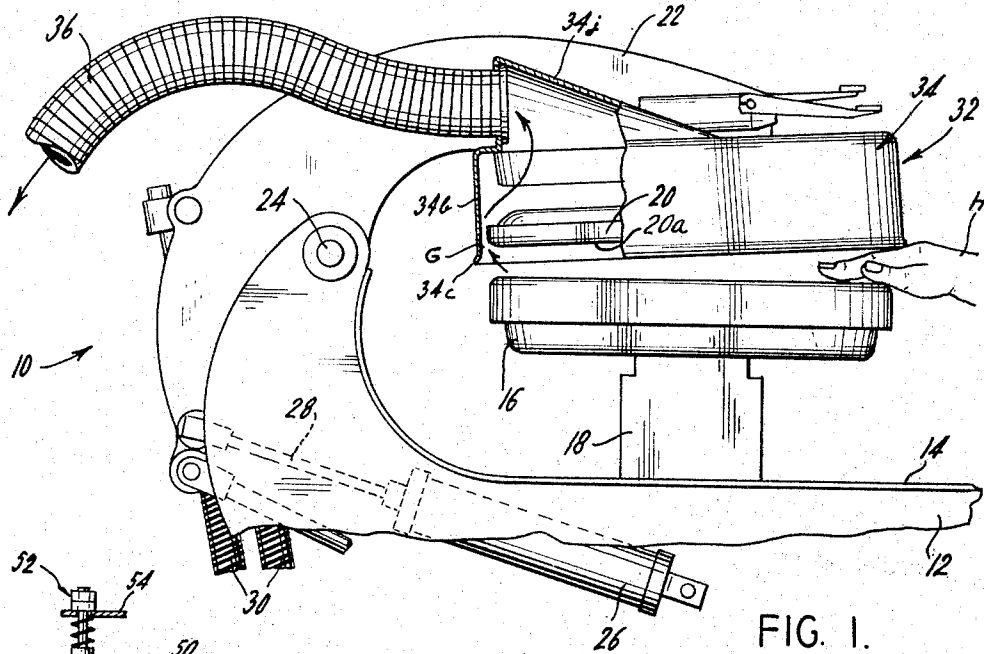


FIG. 1.

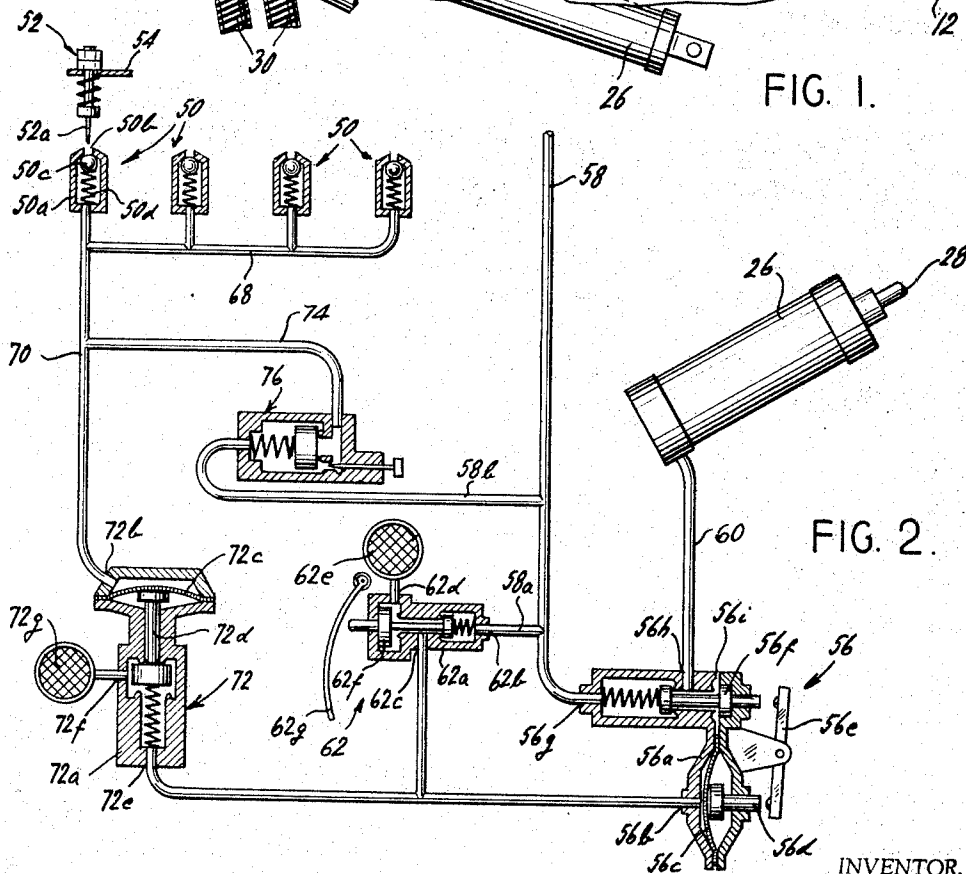


FIG. 2.

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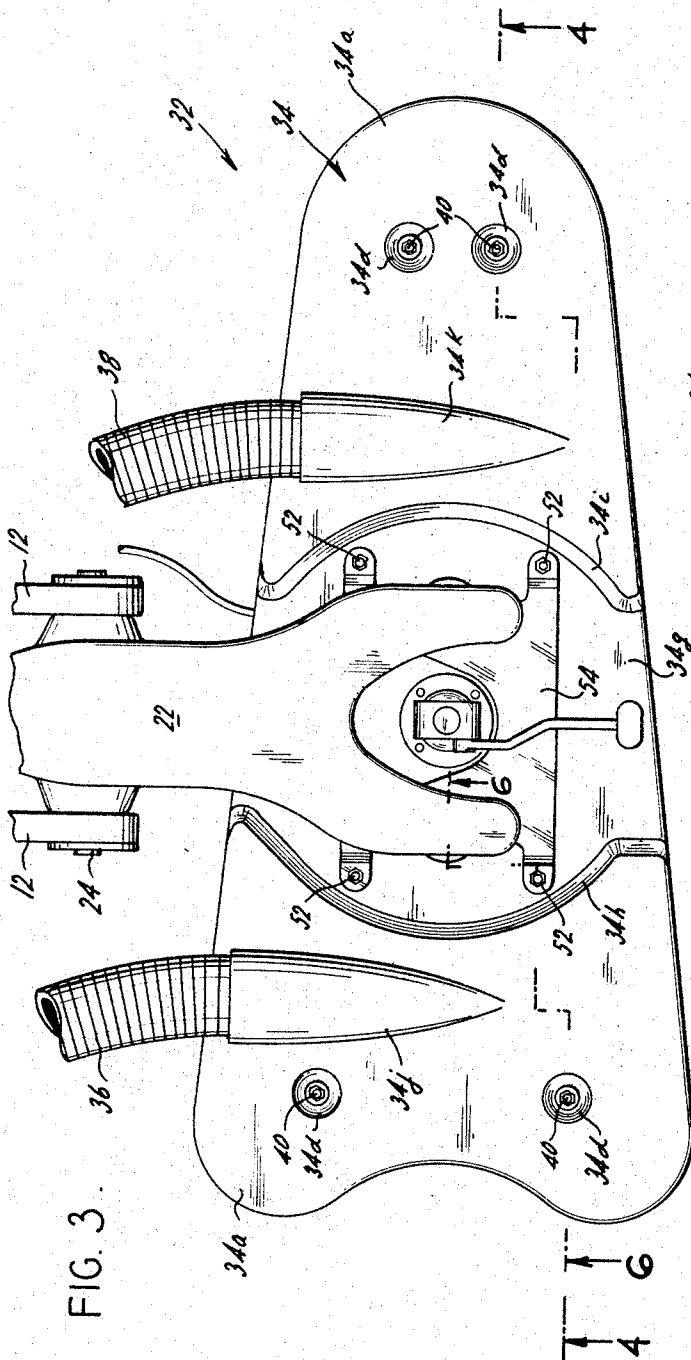


FIG. 3

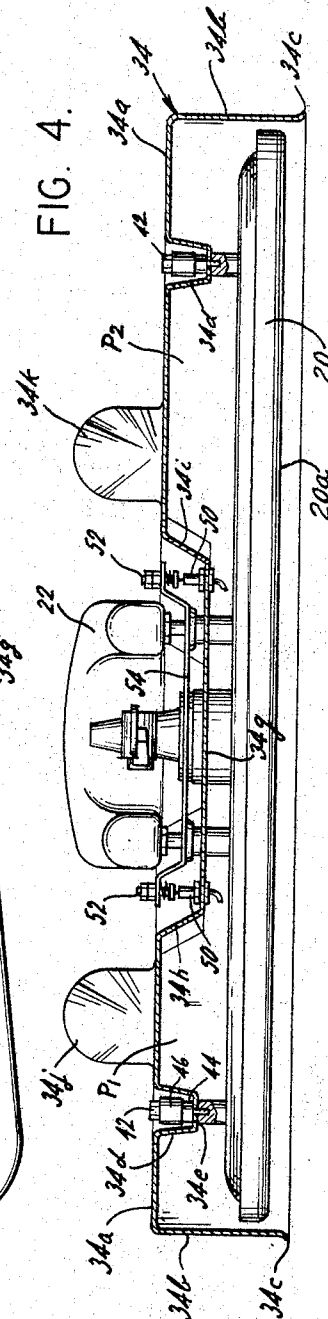


FIG. 4

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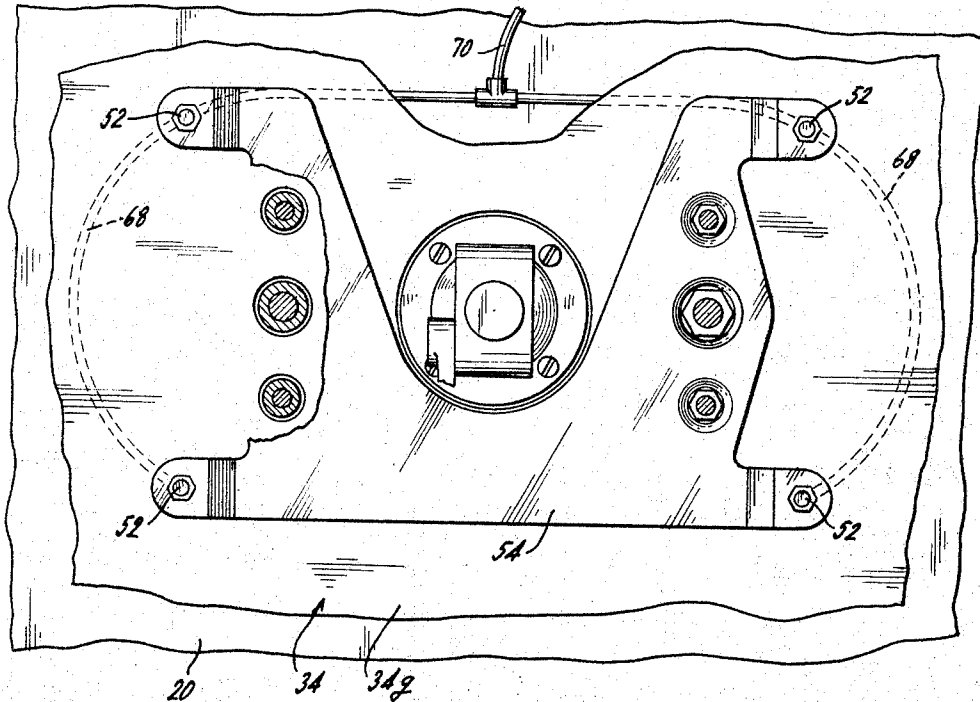


FIG. 5.

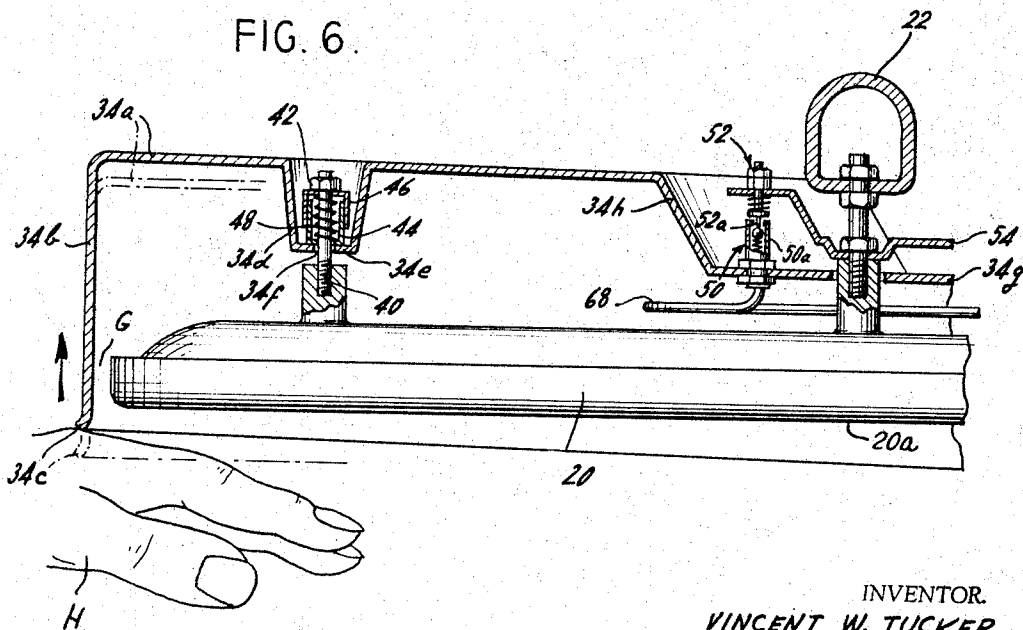


FIG. 6.

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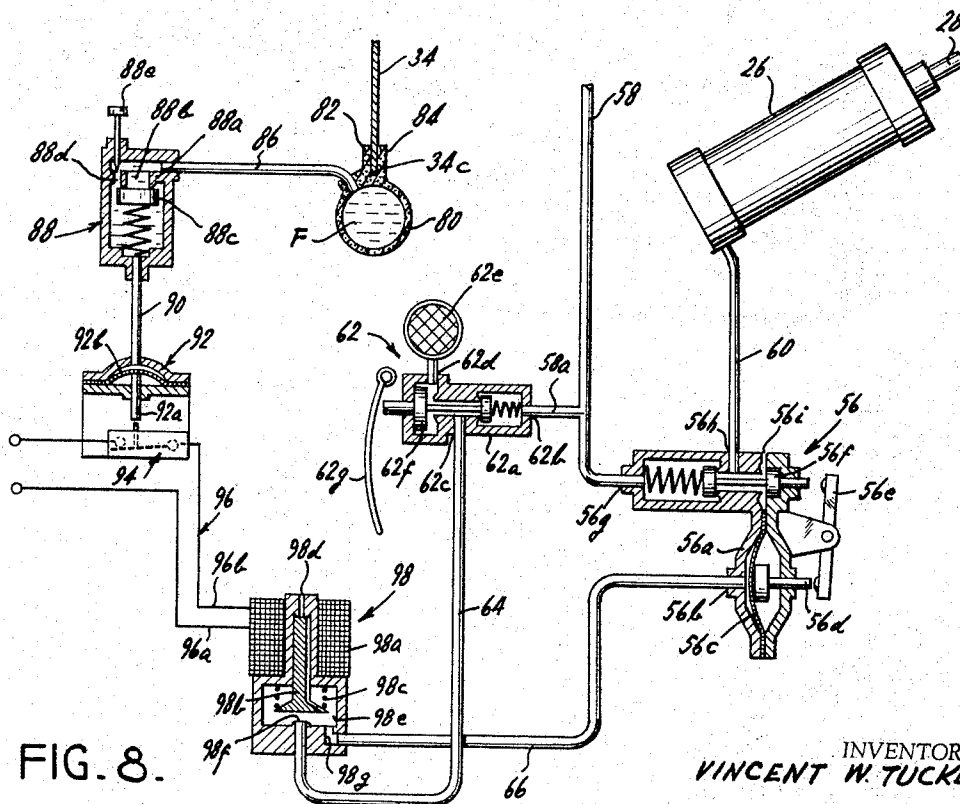
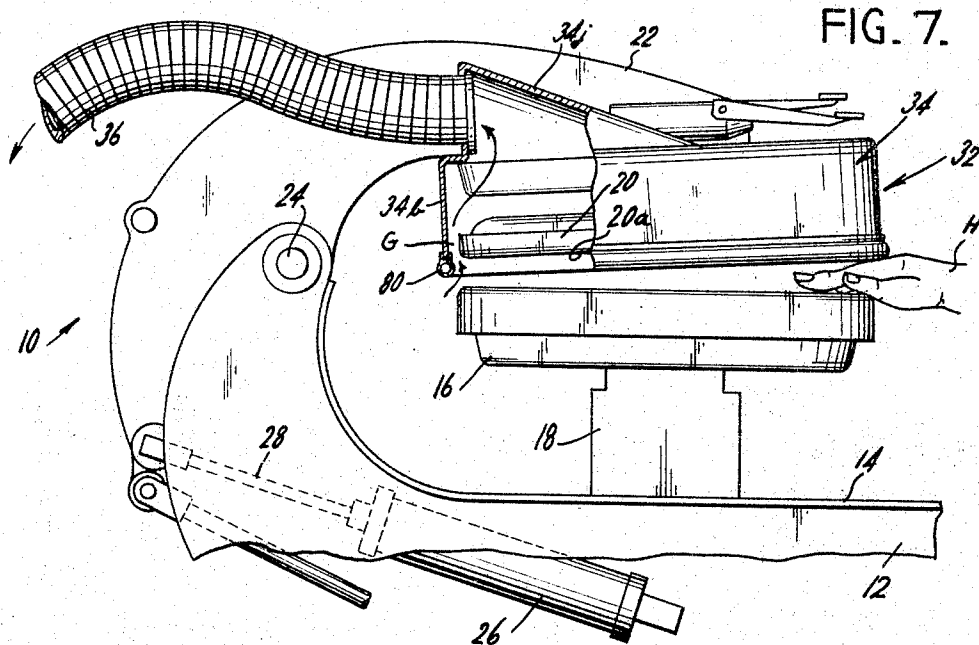
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4 Sheets-Sheet 4



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COMBINED SAFETY AND EXHAUST HOOD FOR PRESSING MACHINE

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4 Claims. (Cl. 38—27)

This is a continuation-in-part of application Ser. No. 446,832, now forfeited, filed Apr. 9, 1965, and entitled, "Combined Safety and Exhaust Hood for Pressing Machine."

The present invention relates generally to pressing apparatus, and in particular to a combined safety and ventilating hood for a conventional garment pressing machine.

A conventional garment pressing machine comprises a support, a stationary buck on the support and a movable pressing head on the support mounted for a motion cycle including a closing phase from an open position removed from said buck to a closed position confronting and abutting said buck. Pneumatic actuating means are operatively connected to the pressing head for moving the pressing head through its closing phase into the closed position. Spring means are operatively connected to the pressing head and arranged to return the pressing head to the open position after the pneumatic actuating means has served its function. Various suggestions have been made for the provision of a combined ventilating and safety hood surrounding the movable pressing head of this type of pressing machine. None have achieved large spread commercial acceptance, apparently because they have failed to meet the practical requirements imposed for such commercial acceptance. There exists a need for an improved exhaust hood system for a pressing machine which will contribute materially to operator comfort, improved pressing quality, achieve cost reduction (particularly when the work area is to be air conditioned or otherwise cooled) and contribute materially to operator safety.

It is an object of the present invention to provide a combined exhaust safety device for use on a pressing machine which realizes one or more of the aforesaid objectives. Specifically, it is within the contemplation of the present invention to provide a system which confines and removes heat radiated from the pressing head of a pressing machine and is suitable for aborting the motion cycle of the pressing head during the automatic closing thereof.

In accordance with illustrative embodiments demonstrating objects and features of the present invention there is provided a combined exhaust and safety device including a hood which is substantially in the shape of the pressing head of the pressing machine and which is mounted on the pressing head for movement simultaneously therewith. The lower edge of the hood is extended below the pressing face of the pressing head and in this advantageous position is effective to sense, by physical contact therewith, any obstruction in the path of movement of the pressing head. When this occurs, control means which respond to this sensing of an obstacle by the hood, are effective to abort the motion cycle for the pressing head and to restore the pressing head to the open position. The mounting arrangement of the hood on the pressing head, which provides simultaneous movement of these elements, also permits relative movement therebetween. Such relative movement absorbs the shock of the contact by the leading edge of the hood with an obstruction. Also during this interval of relative move-

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ment or "lost motion" between the hood and pressing head a necessary time interval elapses for the control means to be effective in aborting the motion cycle of the pressing head. In one of the embodiments illustrated herein this relative movement between the pressing head and hood is directly utilized to initiate the functioning of the control means which aborts the motion cycle. In another illustrative embodiment, a sensing element is mounted about the periphery of the leading edge of the hood and a change in condition of this element, which occurs upon physical contact with the obstacle, is utilized as the means for initiating the functioning of the control means. Advantageously, means are provided for circulating air through the hood which air will pass over the pressing head and serve as a coolant to remove heat from the immediate vicinity.

Multiple benefits are achieved by the use of the aforesaid exhaust safety system, as will be more fully described hereinafter. Briefly, since the hood surrounds the upper pressing head and is capable of exhausting heat and moisture from the vicinity of the head to a remote location, there is substantial reduction of temperature at the operator's station. In a typical installation, the hood may serve to reduce the temperature at the work station from as high as 120° F. to 90° F. Even greater temperature reductions can be achieved when the surrounding environs are air conditioned. A further benefit which results from the use of such hood is the enhanced pressing quality due to the removal of moisture from the pressing area. The removal of such moisture minimizes moisture pickup or retention by the pressed garment and accordingly increases the pressing quality. Still further advantages may be appreciated for those manufacturers who contemplate air conditioning the work area containing pressing machines. The installation of hoods in accordance with the present invention have been found to reduce air conditioning requirements by as much as 35-40%. Thus, an installation which might have required 50 tons of air conditioning capacity prior to the installation of hoods would thereafter require an air conditioning capacity of 30 to 35 tons. Finally, and perhaps most importantly, the presence of the safety hood which responds to virtual finger pressure affords increased safety for everyone in the vicinity of the pressing machines. The hoods are so designed that any interference will immediately abort the automatic pressing machine cycle and restore the pressing head to the open position. As the description proceeds, it will become apparent that the presence of the hoods do not in any way interfere with the pressing operations and/or inconvenience the machine operator.

The above brief description, as well as further objects, features and advantages of the present invention will be more fully appreciated by reference to the following detailed description of presently preferred but nonetheless illustrative embodiments in accordance with the present invention, when taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a fragmentary elevational view of a typical pressing machine having a first embodiment of the present exhaust and safety system installed thereon, the upper pressing head being shown in a position closely approaching the closed position and being illustrated with the hand of the operator interposed between the pressing head and the stationary buck such as to abort the normal automatic machine cycle for restoring the pressing head to the open position;

FIG. 2 is a schematic and diagrammatic showing of a typical control in accordance with the present invention for such first embodiment;

FIG. 3 is a plan view showing a pressing machine having a combined exhaust and safety hood in accordance with the present invention mounted on the upper or movable pressing head;

FIG. 4 is a sectional view taken substantially along the lines 4—4 of FIG. 3 and looking in the direction of the arrows;

FIG. 5 is an enlarged fragmentary plan view, with parts broken away and sectioned, showing further details of the interconnection and interaction between the movable pressing head and the surrounding hood;

FIG. 6 is a fragmentary sectional view taken substantially along the lines 6—6 of FIG. 3, on an enlarged scale, showing the hood in a position upwardly displaced relative to the pressing head incident to contact with the hand of an operator just prior to the aborting of the automatic pressing machine cycle, with the dotted lines illustrating the normal position of the hood relatively to the pressing head;

FIG. 7 is a fragmentary elevational view of a typical pressing machine similar to FIG. 1 but having a second embodiment of an exhaust and safety system installed thereon; and

FIG. 8 is a schematic and diagrammatic showing of a typical control for such second embodiment.

Referring now specifically to the drawings, and in particular to FIG. 1, there is shown a typical pressing machine, generally designated by the reference numeral 10, which includes a support 12 having a work table 14. Disposed above the work table 14 is a stationary buck 16 which is supported on the usual standard or upright 18. Disposed above the stationary buck 16 is a movable or upper pressing head 20 having a pressing face 20a which is mounted on the usual yoke 22 which is in the form of a double arm lever pivoted on the support or frame 12 at a yoke pivot 24. Provision is made for pivoting the yoke 22 about the yoke pivot 24 to move the pressing head 20 from an open position removed from the buck 16 into plural operative positions which may include a zero-pressure position in light contact with the buck 16 and a pressing position in high pressure engagement against the buck 16. To this end, the downwardly directed arm of the yoke 22 is operatively connected to a zero-pressure cylinder and piston assembly 26, 28 which is effective to move the pressing head 20 from the open position to the desired zero-pressure position against the bias of the return springs 30. An additional cylinder and piston assembly (not shown) is connected to the yoke 22 to achieve motion movement from the zero-pressure position to the high-pressure position. Since this brief description will suffice for a complete understanding of the present invention, further description of this pressing machine is dispensed with in the interest of brevity. For a complete description of a typical pressing machine in which the present invention finds useful application, reference may be made to copending application Ser. No. 353,359, now Patent No. 3,279,106 entitled Improved Pressing Machine and Control, filed on Mar. 20, 1964, which application is assigned to the assignee of the present application.

In accordance with the present invention, there is provided a combined exhaust and safety device, generally designated by the reference numeral 32, which serves to confine and remove heat radiated from the pressing head 20 and to abort the automatic motion cycle of the pressing head 20 when an obstruction is presented thereto, as for example the hand H of the operator, as shown in FIGS. 1 and 6. The combined exhaust and safety device 32 includes a hood 34 which conforms generally to the pressing head 20, particularly with respect to the outline thereof, and is fabricated of a material or materials which provide a relatively low mass capable of being easily restrained from continued movement in response to contact with an obstruction, as for example the hand H of

the machine operator or some unauthorized person meddling with the machine. Preferably, the hood 34 is fabricated of fiberglass which may be readily molded into the desired configuration and is capable of withstanding the operating temperatures encountered in close proximity to the pressing head 20. The hood 34, seen best in FIGS. 3 and 4, includes a top wall 34a carrying a depending skirt 34b which terminates in an outwardly flared lower edge or portion 34c which is disposed below the pressing face 20a of the movable pressing head 20. The skirt 34b is dimensioned and shaped to closely follow the margin of the pressing head 20 yet afford a peripheral or marginal gap G therebetween which permits air to be drawn from the surrounding environs upwardly about the pressing head 20 and into the hood 34 for removal to a remote location, as will be hereinafter described. Of course the dimension of the depending skirt 34b and its lower edge 34c serving as a sensing means for an obstruction is such that there will be no interference with engagement between the pressing head 20 and the stationary buck 16, as seen in FIG. 1. The top or upper wall 34a of the hood 34 is formed at four spaced locations contiguous to the opposite ends thereof with integrally molded mounting walls which are disposed below the plane of the top wall 34a. The mounting wall for the front left side of the hood 34 (when viewed from above as shown in FIG. 3) is seen in detail in FIG. 6. Accordingly, this particular mount will be described as being typical of the three remaining mounts. As seen in FIG. 6, the top wall 34 is formed with an integral downwardly extending frusto-conical mounting flange 34d which terminates in the mounting wall 34e which is provided with a central cutoff 34f receiving a mounting stud 40 projecting upwardly from the pressing head 20, as will be subsequently described. Still further, the hood 34 has a central mounting section 34g which is depressed relative to the top wall 34a and serves to afford a convenient location for the mounting of certain components of the control associated with the hood 34. The depressed central mounting section 34g is joined to the top wall 34a by inclined suspending walls 34h, 34i at opposite sides thereof, the shape of the walls being seen best in FIGS. 3 and 4.

The configuration of the hood 34 is such that there are formed at the opposite ends thereof respective plenum chambers which serve to enhance the cooling effect of the ventilating hood on the pressing head 20. The first 34h and an intermediate portion of the top wall 34a, while plenum chamber P₁ is bounded by the contiguous portions of the depending skirt 34b, the inclined suspending wall the second plenum chamber P₂ is similarly defined by the contiguous portions of the depending skirt 34b, the inclined suspending wall 34i and the intermediate portion of the top wall 34a. The left segment of the top wall 34a is formed with an integral outlet 34j which communicates with the first plenum chamber P₁ and is connected via a flexible hose 36 to the exhaust system. Similarly, the right segment of the top wall 34a is formed with an integral outlet 34k which communicates with the second plenum chamber P₂ and is connected via a flexible hose 38 to the exhaust system. As is generally understood, the exhaust system has a fan which is directed to create a vacuum in the respective plenum chambers P₁, P₂ which will tend to draw air from the room through the gap G, over the pressing head 20 and thence into the exhaust system via the hoses 36, 38, as illustrated in FIG. 1.

The plural mounting means which operatively connect and suspend the hood 34 from the pressing head 20 at the four locations each includes a spring which serves to resiliently suspend the hood from the pressing head and cooperating guide means which establish a limited sensing stroke of the hood 34 relative to the pressing head 20. Specifically, and as seen best in FIG. 6, the pressing head 20 carries an upwardly projecting mounting stud 40 at each of the four mounting locations. The mounting stud

40 at this location projects upwardly through the central hole 34f in the mounting plate 34e and carries an adjustment nut 42 at the upper threaded end thereof. Mounted on the stud 40 between the nut 42 and the mounting wall 34e are a pair of oppositely directed guide cups 44, 46 which slide relative to each other. Mounted on the stud 40 between the oppositely directed guide cups 44, 46 is a suspension spring 48. Thus, at each of the four locations, the hood 34 is resiliently suspended from the pressing head 20 for limited "lost motion" of the hood 34 relative to the pressing head 20. In practice, the obstruction causes the hood 34 to remain stationary while the pressing head continues its momentary descent which brings about a limited movement between the pressing head 20 and the hood 34 which according to one embodiment of the invention hereof is employed to initiate a control for aborting the motion cycle and restoring the pressing head to the open position, as will now be described.

The control, which responds to relative movement of the hood 34 and the pressing head 20 and is in controlling relation to the cylinder and piston assembly 26, 28 for aborting the motion cycle of the pressing head 20, is illustrated in FIG. 2 and includes a plurality of abort-initiating mechanisms. In this illustrative embodiment, there are four of such abort-initiating mechanisms which are mounted within the central section 34g of the hood 34 and within the depression defined by the inclined suspending walls 34h, 34i. Specifically, each of the abort-initiating mechanisms includes an air valve 50 which is mounted on the hood 34 and cooperates with a valve actuator 52 carried on the pressing head 20. Each of the valve actuators is effective to operate its air valve in response to relative movement of the hood 34 and the pressing head to activate the control illustrated in FIG. 2 for aborting the motion cycle. The air valves 50 each include a valve housing 50a terminating in an air outlet 50b which is closed by a ball 50c biased into position by an internal spring 50d, as is generally understood. Each of such air valves is mounted on the depressed central section 34g of the top wall 34a of the hood 34, with the four air valves being arranged symmetrically of the yoke 22 as seen best in FIGS. 3 and 5. Each of the valve actuators 52 includes an actuator pin 52a which in the first instance may be adjusted to any predetermined position by a spring mounting arrangement. When so adjusted, the actuator pin 52a is effective to move the ball 50c of the valve 50 away from the opening 50b in response to relative movement between the pressing head 20 and the hood 34 to port the air valve 50 to atmosphere for the intended control function. The plural valve actuators 52 are suspended above the pressing head 20 on an actuator-supporting plate 54, which plate is seen to be incorporated into the means which are provided for suspending the pressing head 20 from the yoke 22, as is generally understood.

Reference will now be specifically made to FIG. 2 for a description of the control which responds to the plural abort-initiating valve 50 and is operative to port the pneumatic cylinder and piston assembly 26, 28 to atmosphere to restore the pressing head 20 to the open position in response to an obstruction contacting the lower or sensing edge 34c of the hood 34. Before proceeding with the description of the control illustrated in FIG. 2, it should be understood that the same is to be incorporated as a component or building block of an overall pressing machine control, as fully described in the aforesaid copending application. Specifically, the illustrative control includes a diaphragm-operated control valve 56 which is of conventional construction and includes a valve housing 56a, a control inlet 56b, a control diaphragm 56c, a diaphragm plunger 56d, a rocker 56e and a combined valve head and plunger assembly 56f. Associated with the valve head and plunger assembly 56f is an air inlet

56g which is adapted to be connected to the pneumatic supply or air line 58, an air outlet 56h which is connected via line 60 to the pressure side of the cylinder 26 and an air exhaust 56i which ports the cylinder 26 to atmosphere to abort the motion cycle of the pressing head and enables the same to be restored to the open position by the usual springs 30. Air from the supply line 58 normally stands against the valve head and plunger assembly 56f. Upon operation of the valve by the admission of air at the control inlet 56b and operation of the diaphragm and interrelated elements 56d and 56e, air is supplied to the air outlet 56h and thence to the cylinder for initiating the motion cycle of the pressing head. Air is admitted to the control inlet 56b over a conventional hand control 62 which includes housing 62a, air inlet 62b connected to branch 58a of the supply line, air outlet 62c which is connected via line 64, 66 to the control inlet 56b and an exhaust outlet 62d which is connected to atmosphere via the muffler 62e. Disposed within the housing 62a is a valve head and plunger assembly 62f which is actuated by the hand control 62g to displace the valve head and plunger assembly 62f such as to connect the supply 58a via lines 64, 66 to the control inlet 56b for actuating the diaphragm-operated control valve 56 which will initiate the phase of the motion cycle associated with the cylinder and piston assembly 26, 28. To this extent, the control illustrated in FIG. 2 is conventional. In accordance with the present invention, the several air valves 50 which are operated in response to relative movement between the pressing head 20 and the hood 34 are connected via lines 68, 70 to release valve 72. The release valve 72 includes a valve housing 72a, a control inlet 72b, a diaphragm 72c, a valve head and plunger assembly 72d, an air inlet 72e, an air outlet 72f and a muffler 72g. In the illustrated position of the release valve 72, the valve head and plunger assembly 72d is biased by the internal spring thereof to normally port outlet 72e to atmosphere over air outlet 72f and muffler 72g. This normally would preclude operation of the diaphragm-operated control valve 56 in response to actuation of the hand control 62. However, the control inlet 72b is not only connected to the air valves 50, but in addition is connected via line 74 and bypass valve 76 to branch line 58b of the air supply 58. Accordingly, the normal air supply is applied over line 58b, valve 76, line 74 and line 70 to the control inlet 72b to normally close release valve 72 such that upon actuator of the control 62, the automatic cycle may be initiated. However, when an obstruction is sensed by the head 34 which manifests itself in opening of any one of the air valves 50, the release valve 72 is ported to atmosphere at the control inlet 72b which instantaneously causes the valve head and plunger assembly 72d to be restored to the illustrated position. This ports the diaphragm-operated control valve 56 to atmosphere via the air outlet 72f and the muffler 72g. This in turn ports the cylinder and piston assembly 26, 28 to atmosphere causing the pressing head to restore to the open position under the influence of the biasing springs associated therewith.

The aforesaid control enables the positive high speed closing of the press without any undue delay due to the presence of the safety circuitry associated with the hood. It enables the automatic and high speed opening of the press when the safety hood strikes an interfering object. Depending upon the setting of the bleeder valve 76, a controllable delay may be built into the system prior to the pressing action being restored after interruption, notwithstanding the fact that the operator may continuously depress the hand control 62.

Reference is now made to FIGS. 7 and 8 illustrating a second embodiment of the exhaust and safety system of the present invention and wherein parts similar to parts already described in connection with the embodiment of FIGS. 1-6 are designated by the same reference number.

For brevity sake, only those parts as are necessary for an understanding of this embodiment of the invention will be specifically referred to. Essentially the difference between the embodiments resides in the provision along the lower or sensing edge 34c of the hood 34 of a tubular sensing element 80 containing a fluid F. Upon contact of the sensing element 80 with an obstruction, such as the hand H of the operator, the normal configuration of the element 80 is naturally modified by being pressed inwardly along that length portion which contacts the hand H, with the result that a corresponding amount of the fluid F is forced from the tube. In effect, the movement of this fluid F from the tube 80 is substituted, in this embodiment of the invention, for the relative movement which occurs between the pressing head 20 and the hood 34 to initiate the functioning of the control means which aborts the motion cycle for the pressing head 20. An appropriate motion-aborting system which is responsive to this fluid movement or change in condition of the sensing element 80 is illustrated in FIG. 8, to which reference is now specifically made.

As is best shown in FIG. 8, the tubular sensing element 80 has integrally molded lip extensions 82 and 84 thereon which define a mounting track therebetween which readily accommodates the hood lower edge 34c therein during the mounting of the tubular element 80 to the hood 34. The fluid chamber of the sensing element 80 communicates via a conduit 86 with the interior of a needle valve 88 having a transverse wall 88a provided with a valve opening 88b therein which is normally closed by a spring-biased piston 88c. The wall 88a also includes a bypass opening 88d in which the needle valve 88e operates. The needle valve 88 is connected via a conduit 90 to a diaphragm-actuated switch 92 having an actuating member 92a connected to the diaphragm 92b thereof and in a position, when actuated, to open a normally closed switch 94 of an electric circuit 96. The conductors 96a and 96b of the circuit 96 are in turn electrically connected to the coil 98a of a solenoid valve 98. In the condition of the solenoid valve 98 as depicted in FIG. 8, which is the normal condition thereof, the valve member 98b is held by the energized coil 98a against the urgency of a spring 98c in a raised position closing the valve venting port 98d and maintaining the two valve openings 98f, 98g open and in communication with each other.

Apart from the foregoing, the remaining structure of FIG. 8 is similar both in construction and functioning to that which was previously described in connection with the embodiment of FIGS. 1-6. To briefly reiterate this functioning to the extent necessary to provide a complete understanding of the embodiment of FIGS. 7 and 8, the hand control 62 similarly functions, on start-up, to admit a pulse of pressure air from the supply line 58 via the branch line 58a into the pressure chamber 98e of the solenoid valve 98. As previously explained, this results from actuation of the hand control lever 62g which permits the pulse of pressure air into the conduit 64 connected to the pressure chamber 98e. Assuming at this time that the solenoid coil 98a is energized, this pulse of pressure air as further directed via the conduit 66 to the diaphragm-operated control valve 56 and, as previously explained, is effective to pulse and hold the element 56e in the operative position thereof which places the cylinder 26 in communication with the air supply conduit 58 while simultaneously closing the port 56i to atmosphere. As a consequence, the piston 28 is actuated into movement causing simultaneous movement of the pressing head 20 and the hood 34 through the motion cycle thereof.

Assuming the presence of an obstruction or obstacle in the path of movement of the hood 34, the contact with this obstacle by the sensing element 80 results in a deformation of the element 80 which in turn produces in this embodiment a flow of fluid F into the needle valve 88. Responsive to this fluid flow, the spring-biased piston

88c is forced from the valve opening 88b and the additional quantity of fluid F entering the needle valve 88 flows via the conduit 90 into the upper pressure chamber for the diaphragm-operated valve 92 resulting in the member 92a thereof being actuated into movement opening the switch 94 and thus also the energizing circuit 96. When this occurs, the valve member 98b of the solenoid-operated valve 98 is urged into its closed position by the spring 98c, in which position the pressure air maintaining the control valve 56 in an operative position is vented to atmosphere via the port 98d. The pressure fluid of the cylinder 26 at this time is then also vented to atmosphere through the port 56i resulting in the pressing head 20 and hood 34 returning to the open position under spring urgency. This, in turn, results in the sensing element 80 backing off of the obstruction and returning to its normal configuration with its normal quantity of fluid F. The fluid F returning to the element 80 flows through the bypass opening 88d and back into the interior thereof to restore the apparatus to the condition depicted in FIG. 8.

A latitude of modification, change and substitution is intended in the foregoing disclosure and in some instances some features of the invention will be employed without a corresponding use of other features. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope of the invention herein.

What I claim is:

1. A pressing machine comprising a support, a stationary buck on said support, a movable pressing head mounted on said support for a motion cycle including a closing phase from an open position to a closed position, pneumatic actuating means operatively connected to said pressing head for moving said pressing head through said closing phase into said closed position, spring means operatively connected to said pressing head arranged to return said pressing head to said open position, a combined ventilating and safety hood of low mass relative to said pressing head positioned over said pressing head and terminating in a sensing portion surrounding and below said pressing head, means mounting said hood on said pressing head for relative movement therebetween during an interval of physical contact of said sensing portion with an obstruction beneath said pressing head, a pneumatic supply for said actuating means and control means for connecting said pneumatic supply to said actuating means for initiating said motion cycle and including sensing means responsive to said physical contact between said sensing portion and said obstruction for disconnecting said pneumatic supply from said actuating means whereby said motion cycle is aborted and said pressing head and hood are restored to said open position by said spring means.

2. A combined ventilating and safety hood for a pressing machine as defined in claim 1 wherein said sensing means includes plural mounting means each having a spring serving to resiliently suspend said hood from said pressing head and cooperating guide means on said hood and pressing head establishing a limited sensing stroke of said pressing head relative to said hood during said physical contact between said hood sensing portion and said obstruction and wherein said control means is responsive to said sensing stroke in disconnecting said pneumatic supply to abort said motion cycle.

3. A combined ventilating and safety hood for a pressing machine as defined in claim 1 wherein said sensing means includes a tubular element containing a fluid forming said sensing portion of said hood and wherein said control means is responsive to the flow of fluid from said tubular element in disconnecting said pneumatic supply to abort said motion cycle.

4. The combination with a pressing machine including a movable pressing head having a pressing face and actuating means for moving said pressing head through a motion cycle including a closing phase and having an

open position and a closed position of a safety device for aborting said motion cycle when an obstruction is presented to said pressing head, said device including a downwardly opening hood substantially in the shape of and surrounding said pressing head and having a lower edge extending below the pressing face of said pressing head, a tubular element mounted on said hood lower edge and adapted to undergo a change in configuration upon physical contact with an obstruction, and control means responsive to said change in configuration and in controlling relation to said actuating means for aborting said motion cycle.

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