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CIRCUIT CLOSER FOR SHEET TRIPS.

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1,389,998. Patented Sept. 6, 1921.

Fig. 2.

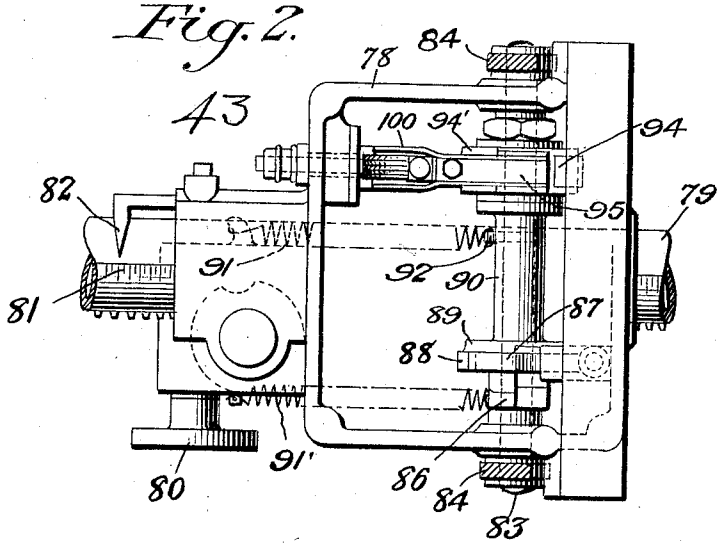
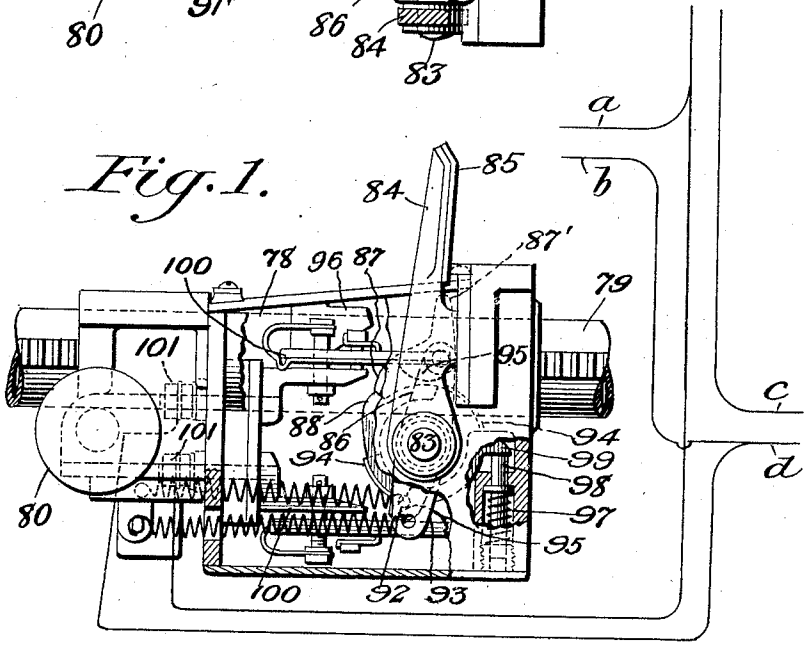


Fig. 1.



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CIRCUIT-CLOSER FOR SHEET-TRIPS.

1,389,998. Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed December 20, 1915. Serial No. 67,818.

To all whom it may concern:

Be it known that we, CHARLES R. SEYMOUR, OTTO M. HOCH, and THOMAS W. ADAMS, citizens of the United States, and residents of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Circuit-Closers for Sheet-Trips, of which the following is a specification.

This invention relates to sheet trips, such as are used in machines for performing certain operations upon a web of moving material, the sheet trip being employed to set certain mechanism in operation when it is engaged by the forward edge of the web.

The object of the invention is to provide a novel sheet trip of the above character in combination with certain other parts, to be hereinafter described, for permitting two clutch members to engage when the sheet trip is actuated by the forward edge of the web.

The sheet trip and the associated mechanism herein disclosed were designed especially for use in a machine for operating upon a web of double-faced corrugated board, such as the one disclosed in Patent #1,321,039, dated November 4, 1919. The machine disclosed in said co-pending application is designed to cut the web transversely into blanks and to provide the web or the cut blanks with longitudinal slits and bending creases. The sheet trip and the associated mechanism herein illustrated is disclosed in the co-pending application and serves to trip the shear mechanism for cutting the web transversely into blanks. The present application is directed specifically to the sheet trip and its associated mechanism and is illustrated in the accompanying drawings in the same relation that it is used in the above-mentioned co-pending application. It will be understood, however, that the sheet trip may be used in other relations and may be found useful for tripping any type of mechanism, the operation of which should depend upon the operation of the sheet trip.

The invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of the sheet trip, certain parts being broken away to expose the underlying mechanism; and

Fig. 2 is a plan view, partly in section, of the structure shown in Fig. 2.

Referring to the drawings, the sheet trip, denoted generally by the reference character 43, is located near the rear part of the machine and is designed to be engaged by the forward edge of a web of material fed forwardly therethrough, as disclosed in the patent aforesaid. The specific manner of feeding the web of material through the machine need not be considered, as it forms no part of the present invention. For the present purpose, it is sufficient to note that when the forward edge of the web reaches the sheet trip 43, the intermediate portion of the web is in position to be operated upon by the shear mechanism that is designed to be set in operation by the sheet trip. Even the shear mechanism need not be herein specifically described, but it should be noted that it comprises a lower knife bar and an upper and vertically movable knife bar operated by an electric solenoid, the energizing of which takes place when the sheet trip itself is actuated.

The sheet trip 43 is electrically connected with the solenoid, not shown, but hereinbefore referred to and it may sometimes be desirable to use more than one sheet trip for engagement by the forward edge of the web. The sheet trip shown in Fig. 1 is connected up for a single arrangement, and in the event that two sheet trips are used, the second trip is connected to the leads *a* and *b*. The leads shown at *c* and *d* may be connected to any suitable source of electric current. When the sheet trip is actuated, it completes the electric circuit, energizes the solenoid, and operates the shearing mechanism.

The detailed construction of the sheet trip will now be considered.

As shown in Figs. 1 and 2, the sheet trip 43 comprises a casing or framework 78 which is adjustable longitudinally of the machine upon a rod 79. By turning the thumb wheel 80, the casing 78 may be shifted until it is brought to the proper position, as shown by the calibrations 81 on the rod 79 and pointer 82 carried by the casing and coöperating with the calibrations. The position of the sheet trip from the shear mechanism determines the length of the blanks cut from the web. Mounted to rock in the

casing 78 is a transversely extending shaft 83 carrying at each end an upstanding arm 84. The upper ends of the arms 84 are connected by a transversely extending sheet-engaging plate 85 adapted to be engaged by the front edge of the web of material. When so engaged, the arms 84 are swung backwardly and the shaft 83 is, therefore, oscillated. The oscillation of the shaft 83 serves to shift a rock arm 86, to the upper end of which is pivoted a pawl 87. The pawl 87 normally engages behind a tooth 88 formed on the flange 89 of a sleeve 90, said sleeve being loosely mounted upon the shaft 83. When the pawl 87 moves forwardly with the arm 86, it, therefore, turns the sleeve 90 upon the shaft 83, but this movement is in opposition to the action of two coil springs 91 and 91′. The coil spring 91 is connected to the rear portion of the casing and to a depending arm 92 carried by the sleeve 90. The coil spring 91′ is connected to the rear part of the casing and to a depending arm 93 that rocks unitarily with the shaft 83 and the arms 84. The sleeve 90 is rotated sufficiently far by the pawl 87 to bring two oppositely disposed contact shoes 94 carried by a member 94′ composed of insulating material, secured to said sleeve 90 into engagement with the corresponding electric contacts 95. After this contact is made, an upwardly projecting arm 87′ associated with the pawl 87 strikes an abutment 96 and serves to lift the pawl 87 out of engagement with the tooth 88. The coil spring 91 then returns the sleeve 90 to its original position and the electrical contact between the parts 94 and 95 is broken. The arms 84 continue to swing downwardly to such an angle that the web passes over the same, and when the blank cut from the web has passed completely over said arms, they are returned to their original upright position by means of the spring 91′ in readiness to be engaged by the forward edge of the next blank.

The return movement of the sleeve 90 is yieldingly checked by means of a coil spring 97 co-axially disposed on a pin 98. A projection 99 associated with the sleeve 90 engages the pin 98 near the end of the return movement of the sleeve, and as the pin 98 is yieldingly held in the position shown in the drawings, the return movement of the sleeve 90 is yieldingly checked. It will be understood that the relation between the strengths of the springs 91 and 97 is such that the sleeve 90 will be normally held in the position shown in Fig. 1, so that when the arms 84 are returned to their original positions, the pawl 87 will drop behind the tooth 88.

In the normal position of the parts, the contact shoes 94 are normally out of engagement with the contacts 95, as best shown in Fig. 1. These shoes are mounted to rotate unitarily with the sleeve 90, so that rotation of said sleeve brings each contact shoe 94 into engagement with the corresponding contact 95. The contacts 95 are carried by arms 100, to which the electric current is conducted from binding posts 101. When the contact shoes 94 are in their circuit-closing position, the electric current flows from one of the binding posts through the corresponding contact arm 100, then through the two connected contact shoes 94, carried by the insulating member 94 and out through the other contact arm 100 and the corresponding binding post, the members which conduct the current in this manner being thus properly insulated from the rest of the structure.

In the complete machine herein referred to, means is provided for conducting the blanks cut by the shear mechanism from the machine at a greater rate than the web is fed through the machine. This is accomplished by a plurality of discharge belts arranged at the rear of the shear mechanism and on which the forward portion of the web rests when the front edge thereof makes contact with the sheet trip. These discharge belts are not illustrated in the drawings, but serve to move the cut blanks over the depressed arms 84 of the sheet trip at a greater rate than the web is fed through the machine, and hence after each blank has passed completely over the arms 84, they will have time to rise and assume their original upright position before the forward edge of the oncoming web reaches the sheet trip. This feature is of little importance, however, when the sheet trip is used in combination with a machine for operating upon separately fed blanks, as the blanks may be so fed to the machine as to be spaced apart, and, therefore permit the arms of the sheet trip to rise after each blank has passed completely over the sheet trip.

It will now be seen that when the forward edge of the web engages with the plate 85 carried by the arms 84 of the sheet trip, said arms will be swung backwardly and will cause an electric circuit to be completed for a sufficient period to energize the solenoid. The electric circuit is immediately broken, however, as soon as the solenoid is energized, as the contact shoes 94 are permitted to return to their normal inoperative position as soon as the pawl 87 is tripped during the movement of the arms 84. It will thus be seen that although the arms 84 are held in their depressed positions during the entire passage of the blank over the sheet trip, the electric circuit is not completed during this entire period, as the return movement of the contact shoes 94 to their normal position brakes the circuit immediately after the circuit is first completed. The energization of the solenoid trips the clutch mechanism in the manner above de-

scribed to set the shear mechanism in operation.

It will now be clear that the sheet trip and its associated parts are capable of other uses than that herein disclosed, and that it is immaterial what specific form of mechanism is controlled by the sheet trip. Although the trip has been described in connection with a machine for performing certain operations upon a web of material, such as double-faced corrugated board, it will be understood that the sheet trip is not limited in its use to a machine for operating upon webs of material, as it will perform its function in the same manner in machines for operating upon material in other forms.

What we claim is:—

1. A circuit closer for sheet trips adapted to be operated by a sheet of material, comprising a rotary circuit closing member, and means having detachable connection with said circuit closing member and having a sheet engaging portion whereby it will be actuated by the sheet of material to rotate said circuit closing member.

2. A circuit closer for sheet trips adapted to be operated by a sheet of material, comprising a rotary circuit closing member having oppositely disposed contact shoes, oppositely disposed electric contacts with which said shoes are normally out of engagement, and means having detachable connection with the circuit closing member and having a sheet engaging portion whereby it will be actuated by the sheet of material to rotate said circuit closing member to bring the shoes into engagement with the contacts.

3. A circuit closer for sheet trips adapted to be operated by a sheet of material, comprising a rotary circuit closing member, shiftable means having pivotal connection with the circuit closing member and having a sheet engaging portion, and connections between said circuit closing member and said shiftable means whereby the latter actuates the former.

4. A circuit closer for sheet trips, comprising a rotary circuit-closing member, shiftable means having a sheet engaging portion and adapted to be actuated by the sheet, connections whereby said means actuates said circuit-closing member, means to render said connections inoperative during the shifting of said first-named means, and means to return the circuit-closing member to its original position after said connections are rendered inoperative.

5. A circuit closer for sheet trips, comprising a rotary circuit-closing member, a spring for normally holding said member in its inoperative position, shiftable means having a sheet engaging portion and adapted to be actuated by the sheet, a spring for returning said means to its original position, connections whereby said means rotates the circuit-closing member to its operative position, and means to render said connections inoperative during the shifting of said first-named means to permit the spring acting on the circuit-closing member to return the same to its inoperative position.

6. A sheet trip comprising an upstanding arm having a sheet engaging portion and adapted to be shifted by the sheet and oscillated about a fixed axis, a rotary circuit-closing member also mounted to rotate about said axis, connections between said arm and said circuit-closing member comprising a releasable pawl for causing the circuit-closing member to move with the arm during its operative movement, means operable during the movement of said arm to trip said pawl, and means to return the circuit-closing member to its original position when said pawl is tripped, for the purpose described.

7. A sheet trip comprising a rotary circuit-closing member, shiftable means having a sheet engaging portion and adapted to be actuated by the sheet, connections between said means and the circuit-closing member to cause the latter to move with said means during the operative movement thereof, means to render said connections inoperative during the movement of said first-named means, a spring for returning the circuit-closing member to its original position when said connections are rendered inoperative, and means to yieldingly check the return movement of said circuit-closing member.

Signed at Rochester, in the county of Monroe, and State of New York, this 7th day of Dec., A. D., 1915.

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THOMAS W. ADAMS.

Witnesses:
THOS. D. PATTON,
GEO. L. GOODELL.