

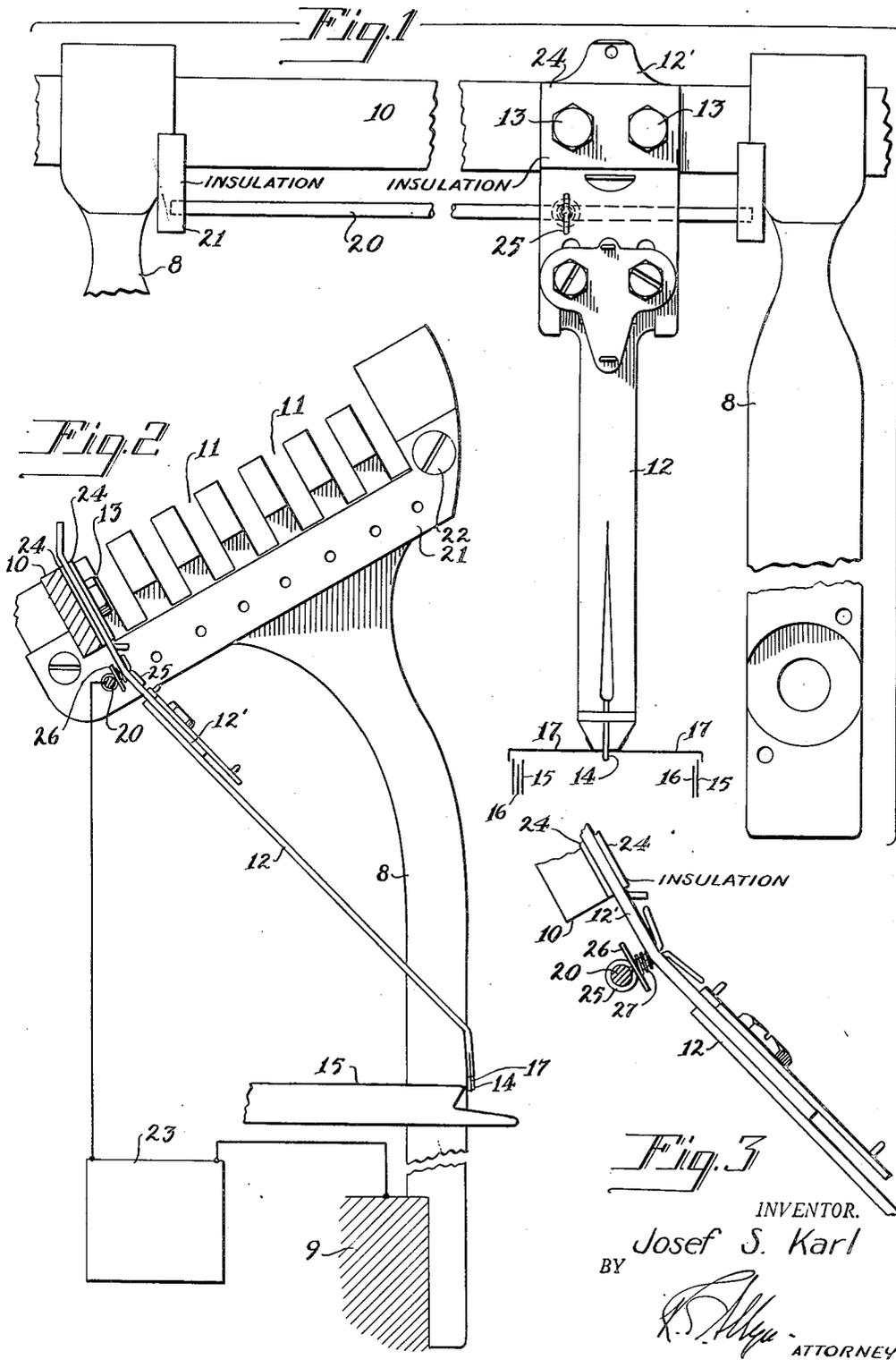
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ELECTRICAL SAFETY ATTACHMENT FOR KNITTING MACHINES

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ELECTRICAL SAFETY ATTACHMENT FOR KNITTING MACHINES

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3 Claims. (Cl. 66—165)

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Full fashioned hosiery machines and other machines of a similar type such as are fully shown and described in a book entitled "The Reading Full Fashioned Knitting Machines" Copyright 1940 by Textile Machine Works, involve the inter-action of sinkers and dividers with the needles and thread carriers, movements of the sinkers and dividers being controlled at times by the catch bar. In case of displacement of the catch bar or failure of timing of the thread carriers with respect to the sinkers great damage and loss of time may result. For instance, thread or other foreign matter sometimes gets into the slot of the catch bar or a sinker or divider may be frozen in its slot. In such cases, the catch bar in its positive forward motion will actually jump above the backs of the sinkers and dividers. If the machine continues to run, the thread carrier would quickly run over the sinkers that were left sticking out and injure or destroy them. Sometimes a carrier friction may become too loose or a leather fall out or motion will otherwise not be properly transmitted to the carrier. As the sinkers come forward a short time after the carrier passes across, if the carrier slows or stops the sinkers may become damaged by the carrier tubes which extend below the upper edge of the sinkers. If the sinkers become damaged, they may stick and cause the catch bar to jump.

It is the purpose of my present invention to prevent costly smashes on such machines. I accordingly provide electric switches which cause a suitable brake to be applied and stop the machine in case the sinkers advance before the thread carriers are in a safety position. The operator cannot start the machine until the fault is remedied.

Fig. 1 is a front view of a section of a machine with a single thread carrier and rod and to which I have applied the safety switch of my invention.

Fig. 2 is a transverse sectional view showing a single carrier rod and carrier.

Fig. 3 is an enlarged fragmentary sectional view showing the support for a thread carrier and its contact rod.

I have shown conventional carrier rod brackets 8, 8 which are supported by a part 9 of the frame and which support the carrier rods 10 in slots 11. Usually there are eight of these rods to each section and each rod supports a metallic thread carrier assembly having a carrier finger 12 and its bracket 12', for instance, by means of the screws 13. Each carrier has a thread guide tube 14 at its lower end and the carrier functions in

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the usual manner in connection with the usual sinkers 15 and dividers 16. The carriers are suitably insulated from the frame. Each carrier is provided at its lower end with switch contact members 17, 17 in the form of wires which extend down to or almost down to the level of the lower end of the guide tube 14 of the carrier to which they are attached. These contact wires should be much finer in diameter than the diameter of the thread guide tubes and should extend slightly below the level of the upper edges of the sinkers. The tips of these contact wires may extend laterally of the guide tube as far as necessary to give a quicker action or contact if the correct motions of the sinkers and carriers are not in accurate timing with each other. The other contact of the switch is in the form of a rod 20, the ends of which are supported in insulating pieces 21 which are attached to the bracket 8, 8 by screws 22, 22. There is one of these contact rods 20 for each of the carriers in a given section and they are connected in parallel to one pole of a motor and brake control switching device 23, the sinkers and the grounded frame of the machine being connected to the other pole of the brake control switch. The carrier and its bracket 12' are insulated from the carrier rod by layers of insulation 24 and has a sliding connection with the contact rod 20. For this purpose I may provide a loop 25 surrounding the rod 20 and having its ends pass through the carrier and riveted over as shown in Fig. 3. To ensure contact with the rod 20, I may provide a washer 26 which is pressed against the rod 20 by spring 27 beneath the thread carrier.

Should the carrier motion get out of time with the sinkers, the sinkers will advance and catch up until a sinker makes contact with one of the contact wires 17 on either side of the carrier depending on whether it travels from right to left or left to right. This will close a circuit and actuate relays for shutting off power and applying a brake to stop the machine. This circuit is provided with a suitable source of low potential current, for example a transformer winding, and a relay of suitable type, located in control box 23, connected in series between the contact wires and the grounded machine frame. It is preferable that the relay be of a locking type and that the contacts actuated thereby be arranged not only to disconnect the machine driving motor from the power supply therefor, but also be arranged to actuate a suitable brake, for example of the solenoid or of the dynamic type, in order more rapidly to stop the machine.

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The form of mechanism for turning off the power and applying a brake to stop the machine is immaterial but preferably the circuit including the switches above described will employ a low voltage.

The form of braking mechanism is also immaterial and it may be of the well known dynamic brake type or solenoid actuated type.

I claim:

1. As an article of manufacture, a thread carrier having a guide tube and a contact wire on each side of the tube, the contact wires being of less diameter than the guide tube and extending down to the approximate level of the lower end of the guide tube.

2. Safety means for a hosiery knitting machine comprising in combination with carrier brackets and a carrier rod, a carrier and sinkers, a contact rod carried by but insulated from the brackets and contact wires carried by the carrier and extending laterally thereof to engage with sinkers in case the carrier and sinkers get out of proper timed relation.

3. In a safety switch for a knitting machine the combination of two spaced carrier brackets with

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carrier rods, a thread carrier supported by each rod but insulated therefrom, a contact rod carried by said brackets but insulated therefrom adjacent each carrier, a contact carried by each carrier and slidable against the contact rod adjacent the carrier rod on which said carrier is mounted and a contact wire carried by said carrier alongside of its guide tube.

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