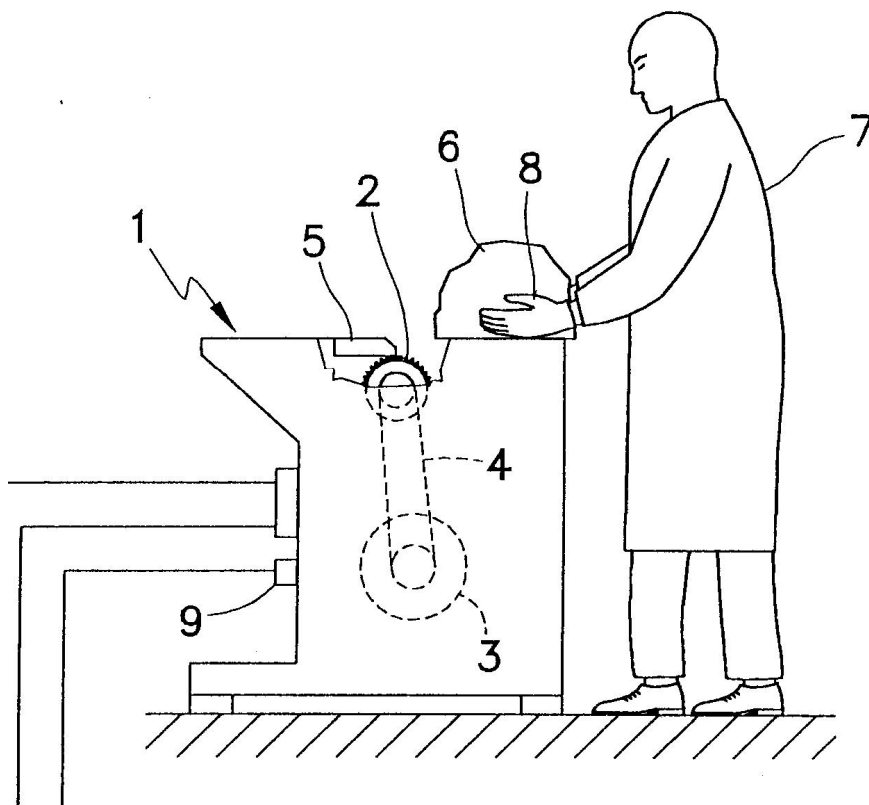


1. Scope

The scope of this document is to supply information about the operating principle of the safety system named CLO.

2. Principle of operation

2.1 Components



Legenda

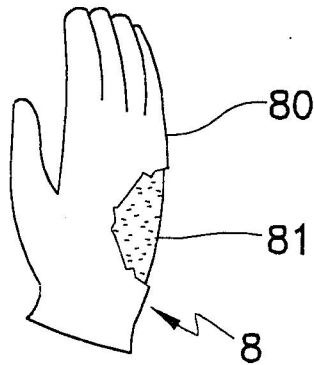
- 1 Metallic structure machine
- 2 Tooth roller
- 3 Motor
- 4 Strap
- 5 Blade holder
- 6 Meat

Grasselli S.p.A | Via S. D'Acquisto, 2/c 42020 Albinea (RE) Italy
Tel. +39 0522 599745 | Fax +39 0522 598147 | info@grasselli.com
P.IVA e C.F. 01218020350 | R.IMPR.RE 01218020350
Società soggetta a direzione e coordinamento di GHG Holding Spa

7 Operator

8 Protection gloves

2.2 Protection gloves structure



Legenda

80 External insulating glove

81 Conductive inner glove

2.3 Description of the CLO

The working principle behind the CLO safety system consists in the sudden stop of the machine whenever the operator gets accidentally in contact with it and the immediate reverse movement of the tooth roller to release whatever has been possibly caught under the blade.

The safety system is triggered by the direct contact of the operator with the machine. This is made by the contact of the conductive glove, connected to the machine and wore by the operator, with any part of the machine frame.

For the correct functioning of the system, the operator must wear two different types of gloves: an inner conductive glove in direct contact with the operator's skin and an outer glove of insulating material. The function of the outer glove is to keep the operator isolated from the machine, while the conductive one has the task to trigger the safety system in case the outer glove is broken.

In order to run the machine in safe conditions it is important to check that the conductive gloves are in good conditions and the operator is wearing them in the correct way. This is made by a specific test the machine requires when switched on and after long pauses.



3. History

Grasselli started working on safety systems for manual skinning machines back in the 80s with the first TLO system presented to the market.

Over the years we have constantly kept on developing the safety system in order to improve its safety features, performance, reliability and user-friendliness. Currently CLO represents the third generation among our safety systems with significant improvements in performance and soundness compared to the previous ones.

In particular, the major improvements applied are:

1. no low voltage electricity continuously passing through the operator's body;
2. no more problems of system functionality connected to humidity and wet working environments;
3. significant improvements to reduce bypass procedures attempted by operators;
4. self-tuning procedures to get the best sensitivity possible according to the working environment conditions;
5. self-control procedures to verify the correct functioning of the system both while the machine is in operation and when the machine is in stand-by mode.

When a new feature/improvement is developed, tested and made official, we apply for patents; currently CLO system and its main features are fully patented.

So far, CLO has been installed on about 800 machines worldwide.

Starting from 2003, the open top machines with the CLO system installed have received the certification from the TUV institute, and other third-part certification institutes in other countries; all these institutes have made the "type examination" on our customer machines and highlighted the increase in safety for the operator, well beyond the standards set by current legislation.

4. Comments

Although we are working on the next generation safety system in order to move to a wireless system, currently CLO can be considered our state-of-the-art system on the market. The improvements made allowed us to solve some big issues the previous systems had, making CLO the most stable system among all. In fact, although the high number of systems installed in the worldwide market, we never had significant issues different from a regular maintenance of the system, meaning marginal changes to solve minor issues (never involving the overall safety of the system) and improve performance and efficiency. So far, we have never been involved in legal proceedings due to accidents on machines with CLO installed.



The CLO system has been also positively accepted by foreign certifications institutes as a safe device to be worn by the operator and by Health and Safety Institutions in different countries as an effective and state-of-the-art risk reduction device.

