June 9, 1959 R. M. MAGNUSON ET AL, 2,889,986

COUNTING MECHANISM FOR USE IN CANNERIES AND THE LIKE

Filed May 17, 1951 2 Sheets-Sheet 1

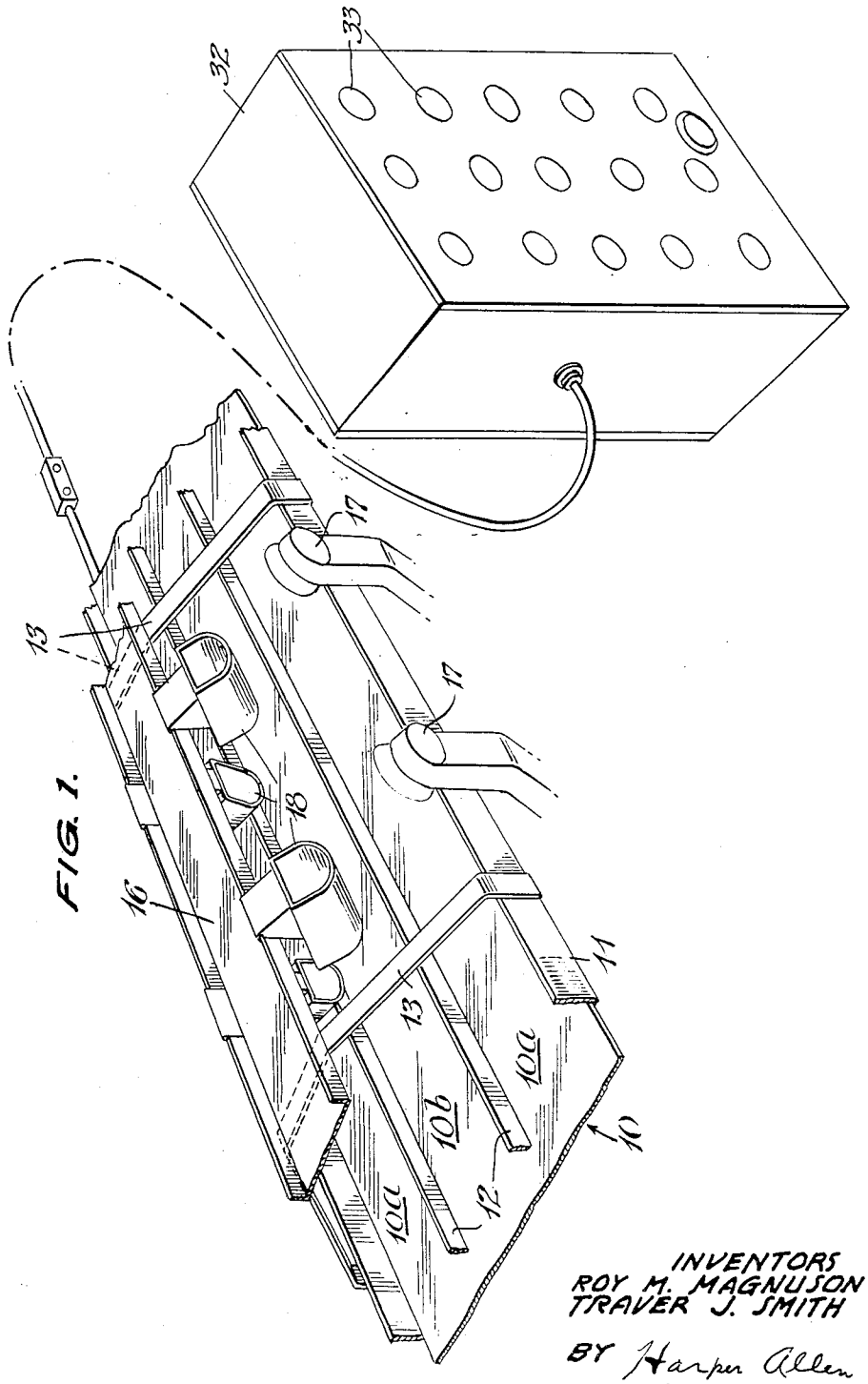


FIG. 1.

INVENTORS
ROY M. MAGNUSON
TRAVER J. SMITH

BY Harper Allen
ATTORNEY

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FIG. 4.

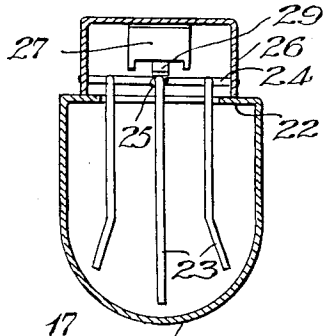
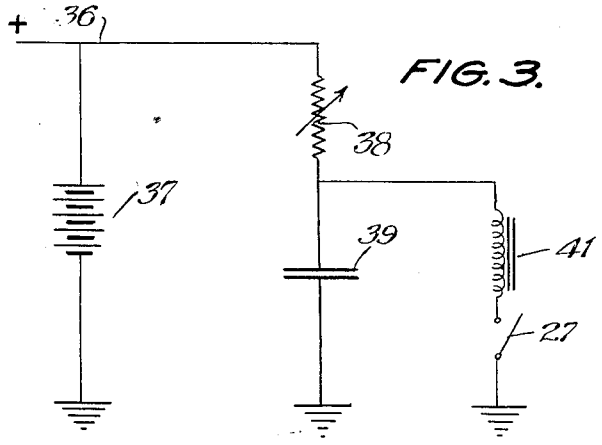


FIG. 2.

FIG. 3.



INVENTORS
ROY M. MAGNUSON
TRAVER J. SMITH
BY Harpur Allen
ATTORNEY

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COUNTING MECHANISM FOR USE IN CANNERIES AND THE LIKE

Roy M. Magnuson and Traver J. Smith, Santa Clara County, Calif.; said Smith assignor to said Magnuson; Genevieve I. Magnuson, executrix of said Roy M. Magnuson, deceased

Application May 17, 1951, Serial No. 226,842

3 Claims. (Cl. 235—98)

The present invention relates to a counting mechanism for use in canneries and the like where piece work by each individual operator must be counted in order to determine the day's pay, or bonus, and is concerned more particularly with the above type of counting apparatus in which an honest count by the worker is insured and which is individually adjustable to each individual worker.

Known systems for counting individual workers operations in canneries usually employ placing of the counter actuator or counter actuating switch at an inaccessible location with respect to the worker, so that it would be impossible for her to use her hands to produce a false count without being observed by the supervisor. Even with such systems certain workers acquire skill in throwing the articles being processed through the counting chute to cause them to make one count, bounce back and make another count as they operate the switch actuator the second time. The inaccessible location results in slowing up the work of the operator, particularly with an unskilled operator, as it requires a certain amount of practice to throw the article being processed into the counting chute and, at the same time, with certain kinds of articles, for example, tomatoes, this results in injury to the article because of the distance which it had to be thrown to enter the counting chute.

In accordance with the instant invention the above objections to the location or operation of the counting chute are obviated.

One of the general objects of the invention is the provision of a counting system for use in canneries and the like whereby an honest count by each worker is insured, and at the same time a counting chute is arranged in a convenient and desirable location for fast operation by the worker.

Another general object of the invention is to provide a counting system of the above character which is operated by electrical means of a low voltage character which provides reliability in operation and prevents danger of shock or injury to the workers, this being particularly important in canneries where the work involves the use of water.

Another object of the present invention is to provide a counting system of the above character in which the adjustment of the switch operating means involves a time delay which is set in accordance with the capacity of the worker with which it is being used, so that the worker can operate at full capacity and still cannot gain an advantage by effecting a count without putting an article through the counting chute.

Another object of the invention is to provide a counting circuit for systems of the above character which attains the above objects.

The above and other objects of the invention are attained as illustrated in a preferred embodiment of the invention, shown in the accompanying drawings, in which:

Figure 1 is a fragmentary perspective view of a portion of such a counting system.

Figure 2 is a transverse sectional view through one of the worker's stations showing the arrangement of the work conveyors with relation to the counting chute for actuating the counter.

Figure 3 is a wiring diagram of the counting circuit employed in the counting system.

Figure 4 is a sectional view through the counting chute taken on the line 4—4 of Figure 2.

Referring to the drawings there are shown in Figure 1 four worker stations in connection with a conveyor **10** suitably supported upon a frame **11** and divided into three spaces or strips **10***a* and **10***b* by means of partitions **12** suitably supported on the framework.

Straps **13** extending upwardly from the frame and across the conveyor **10** support a frame **14** for a second conveyor **16** which may serve for example as a conveyor for rejected articles. At either side of the conveyor **10** on the frame angles **11** are food processing units **17**, for example of the character shown in U.S. Patent No. 2,512,921. These units are immediately adjacent the work articles on the adjacent section of the conveyor **10** and opposite to each processing unit **17** is a counting chute **18** supported by means of a bracket **19** on the adjacent angle **14**. The conveyor **10**, therefore, provides two work spaces **10***a* to either side of a central space or strip **10***b* to which the finished work is fed through the counting chute **18**. The structure of the processing units **11** and the counting chutes **18** is duplicated for each of the working strips or spaces **10***a*.

Each counting chute **18** comprises a lower arcuate piece of sheet metal **21** attached at its edges to a transverse backing wall **22**. The wall **22** is perforated to admit the three-pronged wire switch member or actuator **23** pivoted at **24** and spring-urged to the position shown by the spring **25**. Adjacent to the switch actuator **23** a housing member **26** of sheet metal provides space for a microswitch **27** having its actuator arm **29** in adjacent relation to the actuator **23** for movement between the full line and dotted line positions thereof upon movement of the actuator **23**. One terminal of the micro-switch may be grounded and the other extends up to an electrical conduit **31** which houses the electrical connections to the main counter unit **32** (Figure 1), which has a sight opening **33** for each individual counter. The multiple counter unit **32** is located remote from the operators at any desired position.

Referring to Figure 3 the switching circuit includes a suitable source **37** of 24 volt D.C. supply provided between ground and the common lead **36** of the various counting units. Each counting unit comprises an adjustable rheostat **38** which is connected to ground through a condenser **39** and also, through the operating relay **41** for the associated individual counting unit in the casing **32**. The relay **41** is connected through the micro-switch **27** to ground.

The operation of the circuit is as follows:

The combined resistances of **38** and **41** draw a sufficiently small current from the circuit that the relay **41** is insufficiently energized to operate even with the micro-switch **27** closed. However, the condenser **39** will slowly build up a charge and when this charge is sufficient and the switch **27** is closed, the resulting discharge of the condenser will operate relay **41**. The rheostat **38** is adjusted to determine the number of counts which can be made in a given unit of time and the range of this adjustment will provide, for example, for a count of from 20 to 100 units per minute, which is the range commonly employed in canneries and will accommodate many different operations and from the slowest to the fastest worker. The setting of the rheostat **38** controls the slow-to-recover circuit and determines how many times the condenser **39** can be charged and discharged in a given

unit of time. The resistor **38** is set at a slightly faster rate than the particular operator who is working at this station so that regardless of how fast she works the condenser **39** will always have sufficient charge to operate the counter. There is a time delay due to the charging rate of the condenser **39** and this will prevent a second operation by manual flipping of the switch, or by a double operation by an article due to rebound of the article from the wall.

It will be noted that if the switch **27** is operated, and then held closed, only a single operation of the counter will result. It will be noted also, that if the switch **27** is operated and immediately operated again thereafter, only a single count will result, as maintaining the switch closed will prevent building up of a charge on the condenser **39**.

As a result the above circuit, and the counting system employing it, provide for the operation of the system as fast as the operator can normally work and at the same time prevents a dishonest count on the system. This results in being able to place the counting chute **18** in the most desirable location where it is immediately available and handy for the worker and where she can work at a desired rate. This is particularly true in the case of unskilled workers where inaccessible location of the counting chute will penalize them in their pay until skill is developed.

It will be obvious that the invention is capable of variation and modification from the form shown so that the scope of the invention should be limited only by the scope of the claims attached hereto.

We claim:

1. In a counting system for canneries and the like which prevents a dishonest count and also enables location of an article counting chute in an easily accessible position for the worker, a work space including different areas for raw product and for finished product, a counter located in a remote location from said work space, a delayed-action operating means for said counter and located likewise in a remote location from said work space, said operating means including means for incorporating a desired time delay between successive operations of said operating means, means for effecting operations of said counter in response to operations of said operating means, an article chute located in an accessible position adjacent said work space, and a tripping element in said chute connected to said operating means and being operable in response to depositing of articles in said chute for effecting operations of said operating means under the control of said time delay incorporating means.

2. In a counting system for canneries and the like which prevents a dishonest count and also enables location of an article counting chute in an easily accessible position for the worker, a work space including different areas for raw product and for finished product, a counter located in a remote location from said work space, a delayed-action operating means for said counter and located likewise in a remote location from said work space, said operating means including means for incorporating a desired time delay between successive operations of said operating means, means for effecting operations of said counter in response to operations of said operating means, an article chute located in an accessible position for manual transmission of articles between said respective areas of said work space, and a tripping element positioned to be actuated by articles deposited in said chute for effecting operations of said operating means under the control of said time delay incorporating means.

3. In counting systems for canneries and the like which prevents a dishonest count and also enables location of an article counting chute in an easily accessible position for the worker, a counter located in a remote position with respect to the operator, a slow-to-recover operating means for said counter and located therewith including adjustable means for setting the recovery time of said operating means, an article chute located in an accessible position to the operator, and means located in said chute and connected to said operating means and being operable in response to the depositing of articles in said chute for effecting operations of said operating means under the control of the slow-to-recover setting thereof.

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