A. V. JENSEN.

SACK STRETCHING MACHINE.

APPLICATION FILED DEC. 17, 1914.

1,156,482.

Patented Oct. 12, 1915.

2 SHEETS—SHEET 1.

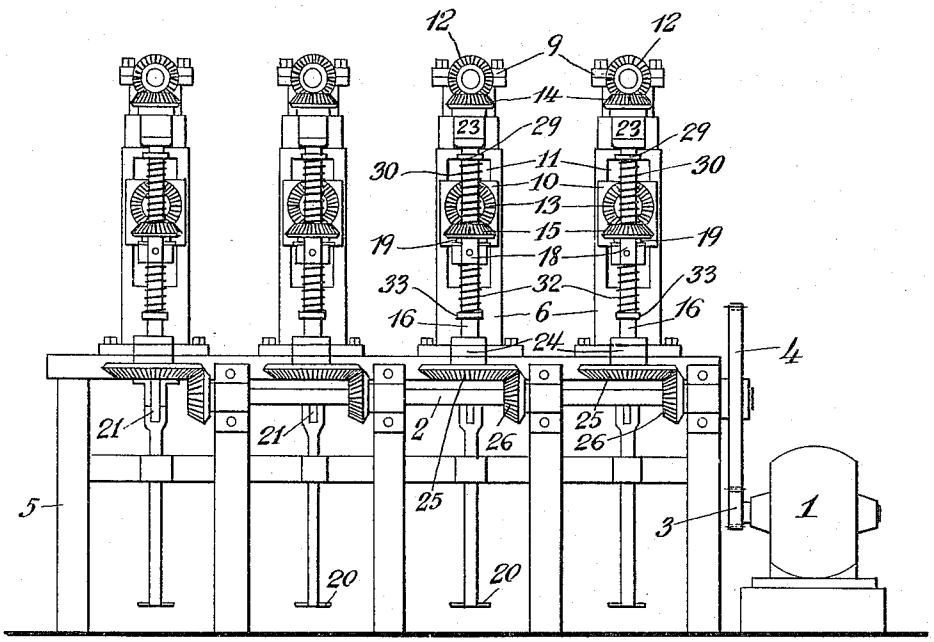


Fig. 1

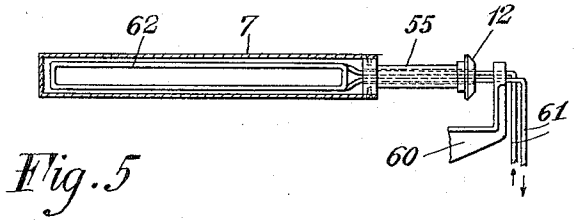


Fig. 5

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2 SHEETS—SHEET 2.

Fig. 3

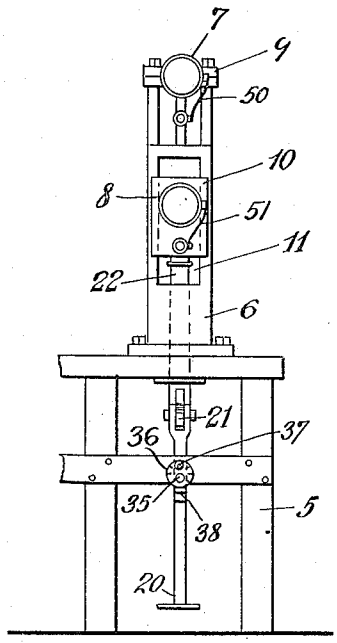
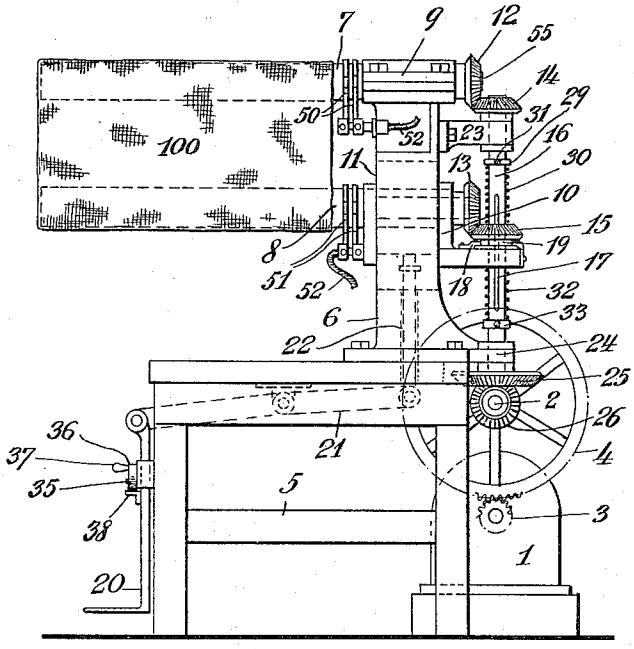


Fig. 2



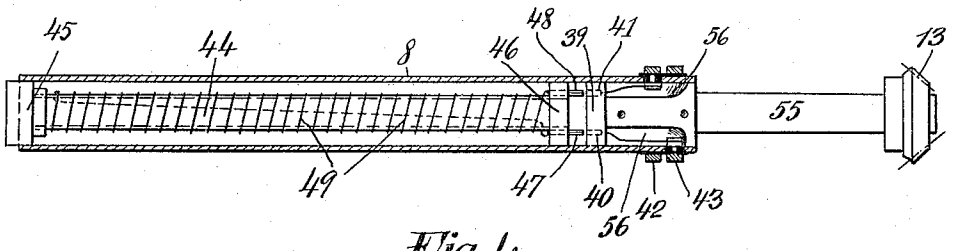


Fig. 4

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SACK-STRETCHING MACHINE.

1,156,482. Specification of Letters Patent. Patented Oct. 12, 1915.

Application filed December 17, 1914. Serial No. 877,660.

To all whom it may concern:

Be it known that I, ALEXANDER V. JENSEN, a citizen of the Danish Monarchy, and a resident of Devils Slide, Morgan county, Utah, have invented certain new and useful Improvements in Sack-Stretching Machines, of which the following is a specification.

This invention relates to a machine for stretching sacks and similar articles. In many industries the products are shipped in sacks and for business reasons certain standard sizes of sacks have been determined upon to contain certain fixed standard quantities of material measured by weight or volume, for example, cement is shipped in sacks supposed to contain ninety-five pounds of cement. It is obvious, however, that if for any reason the sacks shrink, they cannot hold the required standard quantity of material and the result is, that sacks, otherwise usable, are discarded and thus represent a serious loss. In some instances a cement mill or other factory may have several hundreds of thousands of good sacks, which cannot be used because they have shrunk so much that they cannot hold the required quantity of material. The reasons for the shrinkage are several. Thus in the cement industry the sacks are frequently used as coverings for new work and are therefore exposed to the weather and moisture, and it has been found that even pre-shrinking the sacks is insufficient because they become still more wet and shrink still further when used on the work. If a large sack were used and the required quantity filled into it, the sack would appear not filled, which is not desirable and of course, this remedy would not affect the sacks now in use or discarded because of the shrinkage.

The object of this invention is therefore to provide a machine or apparatus for the stretching of sacks to standard or desired size in an efficient manner whereby to avoid the loss due to shrunken sacks and whereby discarded sacks may again be usable. The economic advantages of such a machine or apparatus are obvious in view of the foregoing explanation.

With this and other objects in view the invention is embodied in a sack stretching machine as hereinafter described and claimed, and as illustrated in the accompanying drawings in which—

Figure 1 is a rear view of a battery of sack stretching machines embodying the invention and driven from a common source of power; Fig. 2 is a side view looking from the left in Fig. 1; Fig. 3 is a front view or view of the operator's side of a single machine; and Figs. 4 and 5 are detail views of the stretching rolls.

Preferably several sack stretching machines are mounted upon a common framework and driven from a common source of power which in this instance is represented by the motor 1 which drives a main or line shaft 2 through gears 3 and 4. The shaft 2 is supported in suitable bearings on the general framework or machine supporting means 5.

The machines are alike and each one comprises a fixed frame 6, in which there are mounted two sack stretching rollers 7 and 8. The roll 7 is mounted in a fixed bearing 9 at the top of the machine, while the roll 8 is mounted in a movable bearing 10 which slides in the opening 11 in the frame 6. To each of the rolls 7 and 8 there is secured a gear 12 and 13 respectively which are driven in the same direction by gears 14 and 15 meshing with said gears 12 and 13. The gear 14 is secured to the upright shaft 16 and the gear 15 is in driving engagement with said shaft by a spline 17 or other suitable means. The gear 15 is rotatably held to the movable bearing 10 by suitable jaws 18 which take into an annular groove 19 in the hub of the gear. It is obvious, therefore, that the gear 15 remains in mesh with the gear 13 irrespective of the movement of the bearing 10 carrying said gear.

20 represents a treadle for operating the pivoted lever 21 for moving the bearing 10 through the instrumentality of the vertical lifting rod 22.

The upright shaft 16 is journaled in bearings 23 and 24 and carries a gear 25 which is driven from a gear 26 on the aforesaid main or line shaft 2.

It follows then from the foregoing description that when the motor is started the line shaft 2 drives the upright shafts 16 from which the rollers 7 and 8 are rotated. When a sack is to be stretched, it is first thoroughly soaked in water. Thereafter the operator takes the sack, depresses the treadle 20, thereby lifting the roll 8 and decreasing the distance between the rolls 7 and 8. He then slips the sack 100 over both rolls and lets go of the treadle. The sack is now stretched like a belt over the rolls 7 and 8

and supports the weight of the bearing 10 and all the parts thereon. This operation of mounting the sack on the stretching rolls may be performed whether the rolls 7 and 8 rotate or not. In either case the sack is easily mounted for stretching. When the operator lets go of the treadle the sack is stretched by the weight of the lower roll and bearing 10 and is run over the rolls in the same manner in which a belt runs over its pulleys and so that the fabric of the sack may be evenly stretched all around. In case the weight of the lower roll 8 is not sufficient to completely stretch the sack, a spring 30 may be used as shown and which urges the bearing 10 downwardly, its upper coil acting against a washer 29 adjustably secured to the shaft 16 by a set screw 31 and whereby the tension of the spring may be adjusted. Preferably another spring 32 is used beneath the bearing 10 to help balance the force of the spring 30. The spring 32 acts against an adjustable washer 33.

Means are also provided whereby the operator is enabled to set the lower roll 8 at a predetermined distance from the upper roll 7 to stretch a sack to a certain size. On the framework 5 there is pivoted at 35 a gage plate 36 operable by means of a handle 37. On the treadle is placed a stop 38. The gage plate may be marked as shown for different sizes of sacks. It is obvious, that when the operator takes his foot off the treadle, the latter will move up under the weight of roll 8 and bearing 10 acting on the lifting rod 22, until the stop 38 strikes against the gage plate 36, and of course the roll 8 cannot move down any farther. In this case the springs 30 and 32 also assist in easing the strain on the sack. Any suitable means for maintaining the gage plate in its various positions may be used and are not shown.

In order to properly and quickly stretch the sack it is necessary that some means be employed to assist and further the evaporation of the liquid into which the sack was soaked before being mounted on the rolls. For this purpose heat is applied either directly or indirectly. If the latter method is preferred, the operation may take place in a warm room and blasts of hot air may be directed toward the sack while it is on the rolls. It is not necessary to illustrate apparatus for this purpose, as it is similar to that which is used for the operation of so called drying rooms and well known. I prefer, however, the application of direct heating means as accomplishing the result most quickly and economically. Referring to Fig. 4 which shows a construction suitable for drying the sacks by means of electricity applied to a heating coil, the stretching roll is shown provided with a socket member 39 of insulating material and provided with the conducting sockets 40 and 41, which are electrically connected to the commutator rings 42 and 43. These latter are suitably insulated from the roll which preferably is made from steel tubing. The heating element comprises a hollow cylindrical base 44 provided with heads 45 and 46, all of insulating material. The head 46 is provided with two contact pins 47 and 48 adapted to be thrust into the contact sockets 40 and 41. The terminals of the heating coil 49 are connected to the contacts 47 and 48. Thus it will be observed that the heating element is detachable from the roll as shown in Fig. 4. In order to connect the coil 49, the heating element is moved fully into the roll when the contact pins will enter the contact sockets. Current is supplied to the commutator rings by brushes 50 and 51 to which the cables 52 from a suitable source of current are connected. The shaft 55 for driving the roll is connected to the latter by screws or pins and is cut out as at 56, 56, to leave room for the wires to the commutator rings.

In case steam is preferred, or hot water, the construction shown in Fig. 5 may be used, in which 60 represents a suitable supporting means for the stationary steam pipes 61 which pass through the shaft 55 and into the roll forming a suitable steam coil 62. In either case it will be observed that the sack will be heated while being stretched so that the operation will take but a short time.

The machine as here described is very simple and easily operated. One man can attend to a battery of machines and manipulate each machine independently of the others by simply operating the treadle, thereby working the rolls without stopping their rotation, nor necessitating cutting off the heat.

It will be seen that the machine comprises suitable stretching means together with means for heating the same and the necessary adjusting mechanisms.

Details in the construction may vary and I do not intend limiting my invention to the precise disclosure, nor to the stretching of sacks only, but I claim all such modifications as properly come within the principle of the invention and the scope of the appended claims.

I claim:

1. In a sack stretching machine the combination of a pair of rolls adapted to receive the sack to be stretched, means for heating said rolls, means for operating one of the rolls toward and away from the other roll and means for rotating the rolls.

2. In a sack stretching machine, the combination of a pair of rolls adapted to receive the sack to be stretched, means for heating said rolls, means for rotating said rolls in-

side the sack and expanding means for forcing the one roll away from the other roll inside the sack and while said rolls are rotated.

3. In a sack stretching machine, the combination of a plurality of pairs of rolls, each pair being adapted to receive a sack to be stretched, means for operating the one roll in each pair of rolls independently of the other pairs of rolls to permit a sack to be drawn over said pair, means for heating the rolls and means for rotating the same.

4. In a sack stretching machine the combination of a pair of rolls adapted to receive the sack to be stretched, one of said rolls being operable toward and away from the other roll, means for adjusting the extent of the movement of the one roll away from the other roll and means for operating the said rolls.

5. In a sack stretching machine the combination of a pair of rolls adapted to receive the sack to be stretched, one of said rolls being operable toward and away from the other roll, means for adjusting the extent of the movement of the said one roll and means for operating the rolls.

6. In a sack stretching machine the combination of a pair of rolls adapted to receive the sack to be stretched, means for diminishing the distance between the rolls for drawing the sack upon the same, means for operating one of said rolls away from the other roll to stretch the sack, means for limiting the movement of the said one roll, means for heating the rolls and means for rotating the same.

7. In a sack stretching machine the combination of a frame, a stationary roll mounted to rotate therein, a movable bearing mounted to slide in said frame, a second roll mounted to rotate in said bearing, means for moving the said bearing toward the said stationary roll to diminish the distance between the said rolls for drawing a sack upon the same, means for rotating the said rolls and a spring for forcing the said bearing and the said second roll away from the said first roll to stretch the sack upon the rolls.

8. In a sack stretching machine the combination of a frame, a stationary roll mounted to rotate therein, a movable bearing mounted to slide in said frame, a second roll mounted to rotate in said bearing, means for moving the said bearing toward the said stationary roll to diminish the distance between the said rolls for drawing a sack upon the same, means for rotating the said rolls and a spring for forcing the said bearing, and the said second roll away from the said first roll to stretch the sack upon the rolls, and means for heating the latter.

9. In a sack stretching machine the combination of a plurality of pairs of rolls, each pair being adapted to receive a sack to be stretched, means for operating the one roll in each pair of rolls independently of the other pairs of rolls to permit a sack to be drawn over said pair, means for increasing the distance between the rolls in each pair of rolls independently of the other pairs, means for heating said rolls and driving means for rotating all of the said rolls.

Signed at Devils Slide, Morgan Co., this 9th day of December, 1914.

ALEXANDER V. JENSEN.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."