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BEAD COVERING MACHINE

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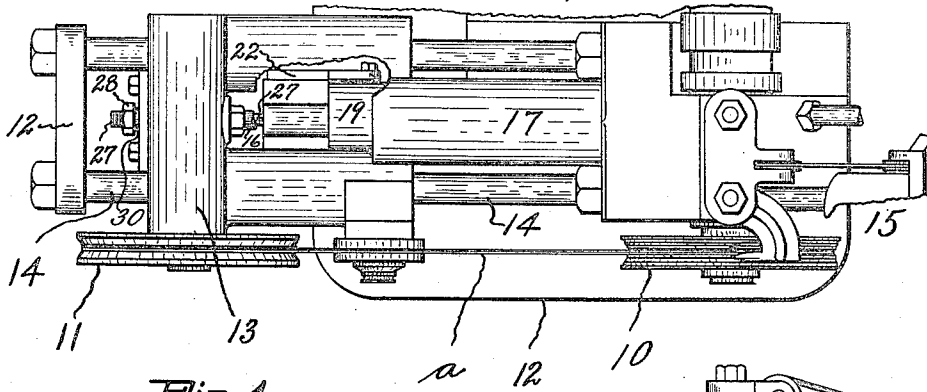


Fig. 1.

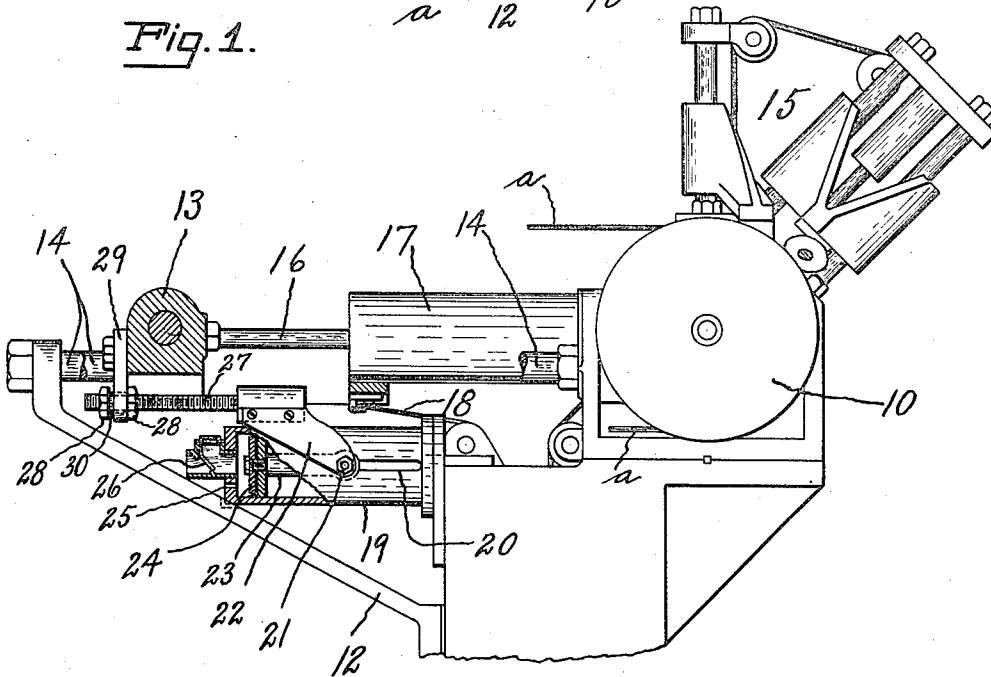


Fig. 2.

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BEAD-COVERING MACHINE.

Application filed June 5, 1925. Serial No. 35,047.

This invention relates to machines for covering endless coils or grommets of wire, such as are used in the manufacture of straight side tires, with a strip of adhesive fabric. More specifically the invention is an improvement on that described in my copending application Serial No. 686,440, filed Jan. 15, 1924, in increasing the tension which can be exerted upon the wire without danger of breakage.

It was found that when normal air pressure was applied to the pneumatic cylinders, which in the prior machine forced the wire supporting rollers apart to stretch the wire, an insufficient force would be exerted to straighten out and equalize bead wire rings having a relatively large number, seven for example, of convolutions. If the air pressure was increased, or if the area of the pneumatic cylinder were made larger to increase the force exerted by the same air pressure, it was found that the pressure would be so suddenly applied that the wires would break, due to the entire strain being exerted on one coil before equalization of the several coils had time to take place. It is the object of the present invention to avoid this difficulty, and to enable a high enough pressure to be used to straighten out the several coils without such a sudden application as to break the wire.

Referring to the drawings,

Fig. 1 is a top plan view of a machine constructed according to my prior application Serial No. 686,440, modified according to the present invention, with certain parts of the old machine removed for clearness; and

Fig. 2 is a side elevation thereof.

The bead wire *a* to be covered is looped about two pulleys 10 and 11, the former being fixed for rotation in the frame 12 of the machine and the latter being rotatable on a carrier 13 slidable on guide rods 14. The folding mechanism, illustrated generally by 15, may be similar to that described in my prior application above referred to and need not be considered here in detail. A piston rod 16, attached to the carrier 13 at one end, carries at its other end a piston (not shown) working in a pneumatic cylinder 17. This cylinder is preferably made larger than the corresponding cylinder of the prior machine, or in the alternative the air pressure is raised, so as to increase the force with which

the pulleys are separated. The carrier is urged in a direction towards the fixed pulley 10 by a weight (not shown) supported by a cord 18, as in the prior machine, and is forced in the opposite direction by the action of the pneumatic cylinder.

Attached to the frame of the machine is a cylinder 19, having slots 20 in its sides. Through these slots pass pins 21 which connect an external member 22 with a piston rod 23 carrying a piston 24 working in the cylinder. The end of the cylinder is provided with a small vent 25 and with a check valve 26 which will allow air to enter the cylinder but not to leave it. Member 22 is secured to a threaded rod 27 which by nuts 28 is fastened adjustably to a bracket 29 on the carrier 13. The rod is adjusted so that the piston has nearly reached the end of its stroke when the pulleys are the desired distance apart, the exact adjustment depending upon the amount of damping of the pulley separating force which is desired.

If compressed air is admitted to the cylinder 17 the carrier 13 will be driven rapidly toward the left in the drawings, gathering momentum as it travels. The momentum of the carrier and pulley, coupled with the driving power of high pressure air, is what caused breakage of the wires in the machine as originally constructed and when used with an excessive air pressure. In the present machine, however, the piston 24 in approaching the end of the cylinder compresses the air ahead of it, the vent 25 being insufficient in size to let all the air out at the high speed at which the piston is moving. The compression of the air absorbs the excessive momentum of the carrier as the latter nears the end of its movement, and when the nuts 28 are properly adjusted the pulley 11 will seem to settle easily into the coil of wire without jerking. The vent 25 is constantly open, however, and the air compressed in cylinder 19 leaks out, permitting the full power of cylinder 17 to be exerted on the wire looped around the two pulleys. It has been found in the practical use of this invention that even when two rings of seven strands each are placed around the pulleys they will be tightened and equalized without danger of being broken by the sudden application of the equalizing force. The check valve 26 permits the carrier 13 to move in

the reverse direction without interference from the cylinder 19.

Preferably a lost motion connection is made between the piston 24 and the carrier 5 13 so as to permit minor movements of the carrier without movement of the piston. During the operation of the device the carrier will respond to minor irregularities and self-adjustments of the wire rings *a*, and it is 10 desirable to have a quick and undamped reaction to these conditions so that the tension on the wire will never be relaxed. In the present case the lost motion connection is established by a sleeve 30 interposed between 15 the nuts 28 and passing freely through a hole in bracket 29.

Having thus described my invention, I claim:

1. A bead wire covering machine in which

the wire is looped around separable pulleys, 20 comprising means to force the pulleys apart and means coupled thereto by a lost motion connection for damping excessive speed of separation without materially decreasing the ultimate force of separation. 25

2. A bead wire covering machine in which the wire is looped around separable pulleys, comprising pneumatically operated means to force the pulleys apart, and an air compressing cylinder provided with a small vent and 30 operatively connected to the said pneumatically operated means through a lost motion connection to damp excessive speed of the separating means without materially interfering with the ultimate exertion of the full 35 force of said pneumatically operated means or with minor fluctuations of the pulleys.

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