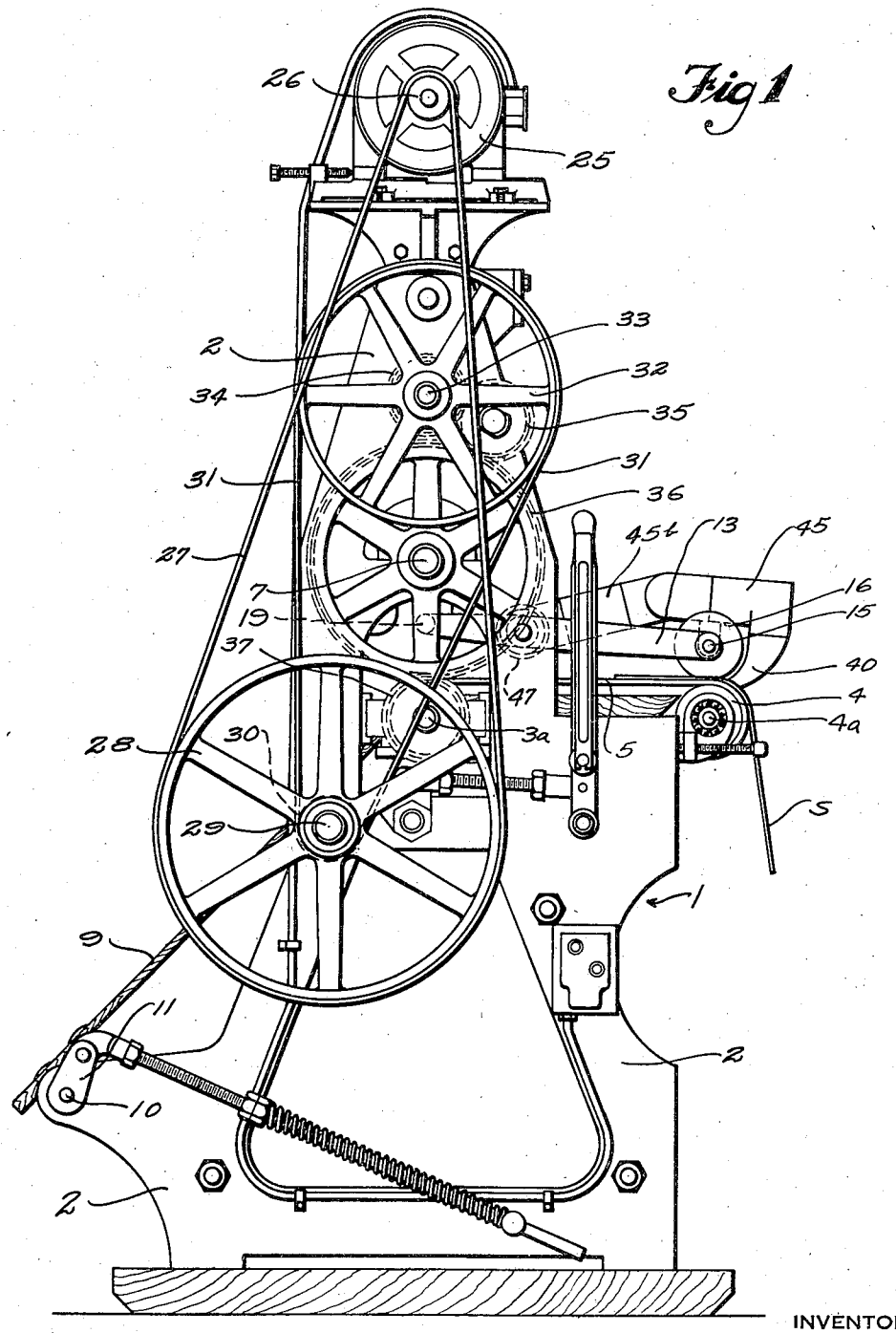
March 28, 1939. H. CARLL 2,152,027

SUCTION CLEANER FOR BAG PRINTING MACHINES

Filed July 26, 1937 2 Sheets-Sheet 1

Fig 1



INVENTOR
HARRY CARLL
BY
Cook & Robinson ATTORNEYS

March 28, 1939. H. CARLL 2,152,027

SUCTION CLEANER FOR BAG PRINTING MACHINES

Filed July 26, 1937 2 Sheets-Sheet 2

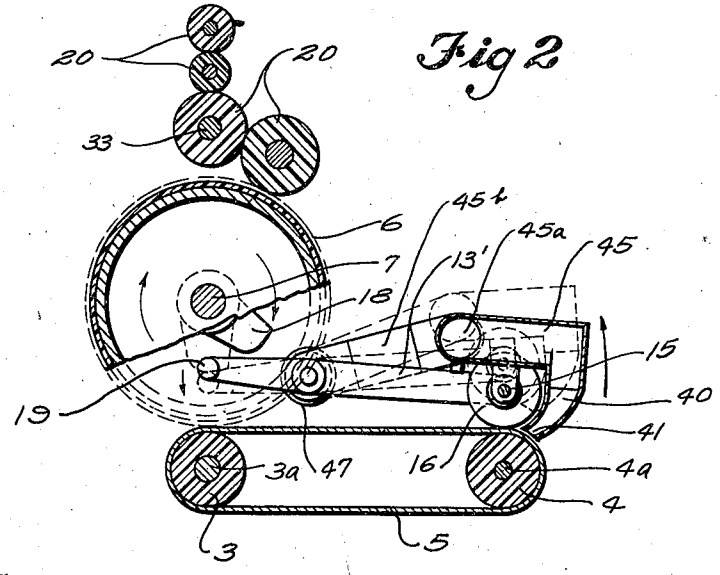


Fig 2

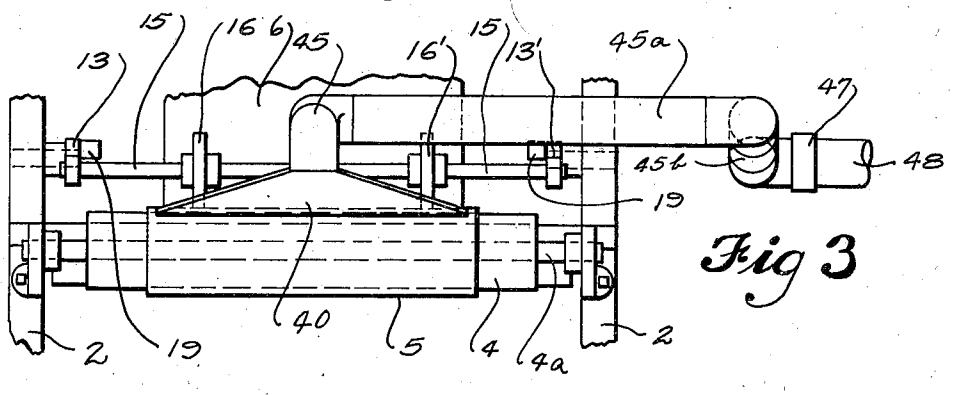


Fig 3

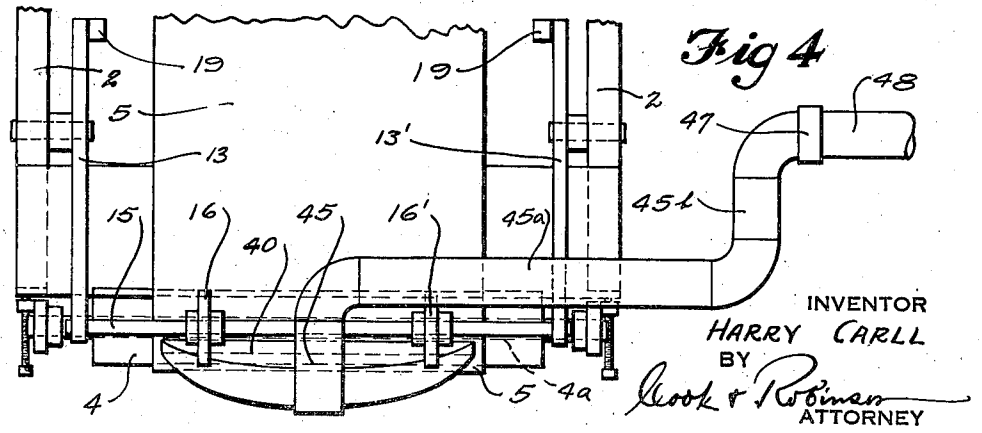


Fig 4

INVENTOR
HARRY CARLL
BY
Cook & Robinson
ATTORNEY

Patented Mar. 28, 1939 2,152,027

UNITED STATES PATENT OFFICE

2,152,027

SUCTION CLEANER FOR BAG PRINTING MACHINES

Harry Carll, Tacoma, Wash.

Application July 26, 1937, Serial No. 155,713

2 Claims. (Cl. 101—425)

This invention relates to improvements in bag printing machines, and it has reference more particularly to machines of that type employed for the printing of labels, trade-marks, brands, and other matter on bags that may be made from burlap, canvas, cloth and other materials, and which are used extensively for the packaging of products produced by flour, feed and grain mills; it being the principal object of this invention to provide an economical and convenient means to be used either as an attachment to or as a permanent part of the printing machine, whereby loose lint, fibers, dust, dirt and particles or pieces of other loose material may be removed from the surfaces of the bags on which the printing is to be done, thus to eliminate its collecting on the surfaces of the printing plate and inking rollers.

As a matter of explanation, it will here be stated that in the ordinary use of machines of this character, there is considerable delay necessitated, and difficulty experienced, by reason of the fact that the type on the plate and inking rollers pick up much loose material from the bags with which they come in contact, and the material that is picked up eventually clogs the type to the extent that the machine must be stopped and the type cleaned. This is a very frequent occurrence and is objectionable because of delay and expense incident to delay. It is in order to avoid this objectionable feature of cleaning the printing type and inking roller that the present invention has been devised. However, it is not intended that the invention shall be confined to the machine shown, but shall apply to all types within the scope of the invention disclosed.

More specifically stated, it is the object of the present invention to provide a suction shoe that is operable in connection with the feed devices of the bag printing machine to contact with each bag as it enters the machine and to remove from the surface that is to be printed on, by suction, the loose fibers of material, dust and dirt which would be detrimental to obtaining the best results of printing.

Other objects of the invention reside in the details of construction and in the combination of parts of the device, and in the mode of operation, as will hereinafter be fully described.

In accomplishing these and other objects of the invention, I have provided the improved details, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Fig. 1 is a side elevation of a bag, or sack printing machine to which the present invention has been applied.

Fig. 2 is a sectional detail of a part of the machine showing the suction shoe as applied, and illustrating its relationship to the bag feed belt and the printing roller.

Fig. 3 is a front end elevation of the suction device and the adjacent part of the machine.

Fig. 4 is a plan view of the same.

Before giving a further explanation of the drawings, it will be mentioned that the details of construction of the machine to which the suction shoe is here shown applied are of no particular consequence, but that the present illustration, which is of a machine quite well known, is used only because it well shows the use and operation of the suction shoe. It is intended that this shoe may be applied to printing machines of other kinds, either with or without alteration.

Referring more in detail to the drawings—

1 designates, in its entirety, a bag printing machine of a type with which the present device is adapted to be associated. The printing machine comprises a frame structure 2 mounting a pair of horizontal rollers 3 and 4 supported in spaced relation by cross shafts 3*a* and 4*a*, respectively. Mounted for travel about the rollers 3 and 4, and held taut thereby, is a continuous feed belt 5 upon which the sacks or bags to be printed may be fed beneath a printing roller 6 to receive the printing thereon.

The printing roller 6, as here seen, is of substantial diameter and is mounted in the frame structure 2 by a horizontal supporting and driving shaft 7. By reference to Figs. 1 and 2, it will be observed that the shaft 7 is directly above the shaft 3*a* and is so spaced from roller 3 that the pressure necessary for printing is received directly by the roller 3 which serves not only as a support and driving means for the belt 5, but also serves as a backing for the printing operation on the sacks as they are delivered over the roller by the feed belt.

As the printed sacks are discharged from between the belt 5 and the printing roller 6, they are received upon a downwardly inclined stacking board 9, which is fixed at its lower end to a cross shaft 10. This shaft is rotatably supported in the frame 2 and at one end, is equipped with a crank arm 11, through the mediacy of which it is oscillated in a manner whereby the sacks, as received onto the board, are delivered onto a stack. Since this part of the machine has no particular bearing on the present invention, it is

not thought necessary to explain it to any further extent.

Pivotally attached to the frame **2**, to extend along opposite sides of the belt **5**, are paired lever arm **13—13'** which, at their outer ends, mount a cross shaft **15** on which rollers **16—16'** are mounted to engage in rolling contact with the feed belt **5** directly above or adjacent the cross roller **4**. The sacks or bags that are to be printed are manually fed to the belt **5** for advancement into the machine by the belt, by inserting their forward end portions between the belt and the roller **15**, and in order that they may be easily inserted and properly timed in their delivery to the printing roller, provision is made for periodically raising the rollers **16—16'** a slight distance above the belt. This operation of raising and lowering the rollers is in timing with the rotation of the printing roller and is effected by paired cams **18** that are fixed on the cross shaft **7** adjacent the opposite ends of the printing roller and which are adapted, with each rotation of the shaft **7**, to contact with cam followers **19** on the inner ends of the lever arms **13—13'** in such manner as to cause the outer ends of the levers to lift the rollers **16—16'** from contact with the belt **5**. It is to be understood that when the rollers **16—16'** are lifted, the end of a sack may then be projected beneath them. Then, when the rollers **16—16'** are dropped downwardly against the inserted sack end, the friction of the belt **5** with the sack carries the latter along the belt to the printing roll, and the label, trade-mark, brand or other matter will be printed on the sack as it is carried by the belt between the printing roll **6** and the roller **3**. The type whereby the printing is accomplished may be of metal, wood or rubber, and may be applied to the roller **6** in any suitable manner. Since this is not a part of the present invention, it is not believed necessary to explain it to any further extent. Likewise, inking of the printing type is effected in the conventional manner through the mediacy of ink applying rolls, as designated at **20** in Fig. 2, which are located above the rollers **6**.

In the present showing, the machine is driven by an electric motor **25** which is mounted upon the top of the frame **2**. This motor has a belt wheel **26** on its driven shaft about which a belt **27** operates to drive a large belt wheel **28** that is fixed on a supporting shaft **29** mounted for rotation in the lower portion of the frame **2**. On the shaft **29** a belt wheel **30** is fixed, about which wheel a belt **31** operates to drive a belt wheel **32** fixed on a cross shaft **33**. Shaft **33** has a geared connection as at **34—35** and **36**, with the shaft **7**, and also at **37** with shaft **3***a* to drive the roller **3** and belt **5**.

The gist of the present invention resides in the provision of means for removing the lint and dust from the surfaces of the sacks on which the printing is to be done, and this means comprises a hollow suction head **40** of substantial volume and provided with a narrow, elongated mouth **41** disposed transversely of and closely adjacent the belt **5** along the top of the belt mounting roller **4**. The mouth **41** is of such length from end to end that it will extend across the sack or at least across the surface which is to receive the printing matter. The shoe itself is hollow and of substantial volume and has a pipe connection **45** leading centrally from the top thereof inwardly over the belt **5**, and then laterally as designated at **45***a*, and is provided at the side of the machine with a rearwardly turned part **45***b* connected through a flexible connection **47** with a pipe **48** leading to a source of suction. The shoe **40** is supported on shaft **15** to raise and lower with the feed rolls **16—16'**. The suction pipe **45** also is fixed to one of the lever arms, **13'**, as will be noted by reference to Figs. 3 and 4, to move therewith. The manner of mounting the shoe provides that it will raise and lower with the feed rollers **16—16'** and when the latter move down against a sack for the purpose of causing it to be fed into the machine, the mouth of the suction show will be moved against the top surface of the sack and the suction applied through the mouth of the shoe will operate after the fashion of the ordinary suction carpet sweeper, to remove the dirt, dust, and lint from the sack. It is important in this respect that the suction shoe shall raise and lower with the feed rolls so as not to interfere with the feeding of the sacks into the machine.

Any suitable flexible connection other than that shown may be provided between the source of suction and the suction shoe, and the shoe might well be mounted in other ways than that shown.

Assuming the device to be so constructed, and applied to the machine, as shown, it is quite apparent that, assuming that the suction is adequate, all the detrimental foreign matter may be removed from the sack and this will result not only in cleaner and more satisfactory application of the label or printing to the sack surface, but will make it unnecessary to clean the type during the ordinary period of printing.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is—

1. In a bag printing machine, a printing roller, a traveling carrier on which bags may be placed flatly for delivery to the printing roller, feed rollers arranged above the carrier means for raising and lowering the feed rollers from and toward the carrier for reception and for feeding of the bags into the machine, a suction shoe connected with a source of suction and having a mouth positioned for the passing of the bags thereacross in their delivery to the printing roller and means for raising and lowering the shoe from and toward the carrier in accordance with raising and lowering of the feed rollers.

2. In a bag printing machine of the character described, a rotating printing roller, belt mounting rollers, a belt mounted for travel about said rollers and upon which bags may be carried flatly to the printing roller, means for driving the belt and the printing roller, feed rollers associated with the belt, means mounting said feed rollers and actuated in timing with the rotation of the printing roller to raise and lower them against the belt, and a suction shoe mounted by the feed roller mounting means to raise and lower the shoe accordingly from and against the belt; said shoe having a mouth across which bags are delivered by the belt to the printing roller.

HARRY CARLL.