

July 21, 1942.

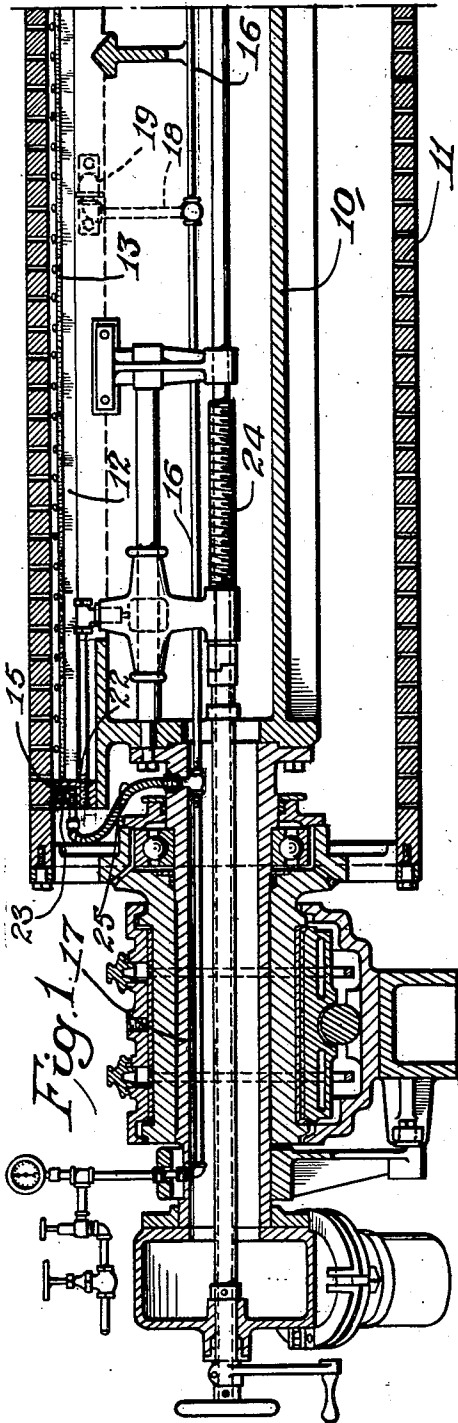
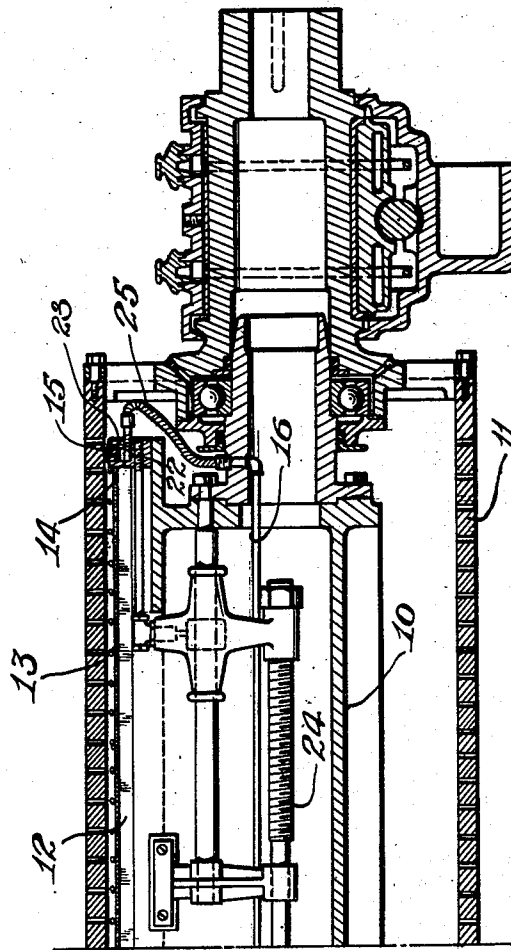
E. T. STREET

2,290,777

SUCTION BOX

Filed Jan. 5, 1939

2 Sheets-Sheet 1



*Inverlor. —
Edward T. Street
by his Attorneys
Howson & Howson*

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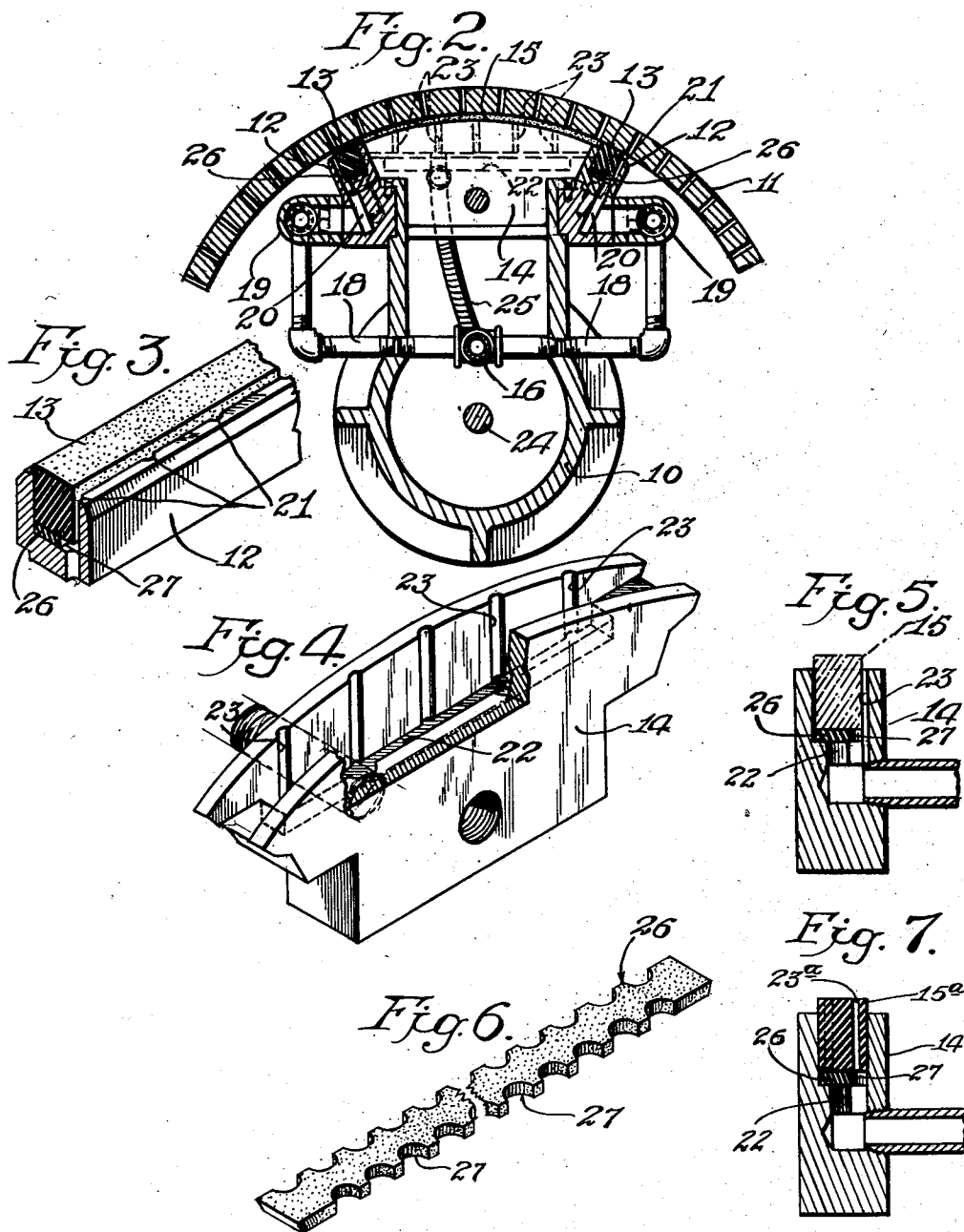
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SUCTION BOX

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UNITED STATES PATENT OFFICE

2,290,777

SUCTION BOX

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Application January 5, 1939, Serial No. 249,538

2 Claims. (Cl. 92—53)

This invention relates to suction rolls and, more particularly, to a means for and method of providing water lubrication and flotation of the packing strips of such rolls.

A further and more specific object of the invention is the provision of a suction box so constructed that water for use as a lubricant and for floating the packing strips may be admitted beneath and about the packing strip and, particularly, at the outer face of the strip so that the suction within the box will cause this water to be drawn over the face of the strip and between the strip and the traveling surface passing thereover.

Another object of the invention is the provision in a device of this character of a construction which may be readily and cheaply produced and which will be durable and efficient in service.

These and other objects I attain by the construction shown in the accompanying drawings wherein, for the purpose of illustration, I have shown the suction box of a suction roll constructed in accordance with my invention:

Fig. 1 is a fragmentary longitudinal sectional view showing one end of a suction roll;

Fig. 1a is a similar view showing the opposite end thereof;

Fig. 2 is a fragmentary transverse sectional view through the roll;

Fig. 3 is a fragmentary perspective of a portion of one of the packing strips and its guide;

Fig. 4 is a perspective view partially broken away of one of the deckle strip mountings;

Fig. 5 is a transverse sectional view through a deckle strip mounting;

Fig. 6 is a characteristic perspective of a pad for use with either of the deckle or packing strips; and

Fig. 7 is a view similar to Fig. 5 illustrating a slightly modified means of delivering water to the outer surface of the packing strip.

Referring now more particularly to the drawings, the numeral 10 generally designates a suction box cooperating with a shell 11 of a suction roll. This box may be of any usual construction and is equipped with guides 12 mounting longitudinal packing strips 13 and with deckles 14 mounting segmental packing strips 15. In the case of a suction roll such as herein illustrated, the deckles and their packing strips are curved to correspond to the curvature of the inner surface of the roll.

In accordance with my invention, I provide a liquid supply means for supplying water for

delivery along the outer face of each of the packing strips 13 and 15. As at present illustrated, a conduit 16 is extended through one trunnion 17 of the roll. Branches 18 of this conduit are extended through the side walls of the suction box and are connected through fittings 19 with longitudinal slots 20 formed in the outer surfaces of the packing guides 12. These slots communicate directly with grooves 21 formed in that wall of the guide which opposes the outer radial surface of the strip and extend throughout the length of such wall and from the bottom to the top of said wall so that liquid passing through such grooves will move along the outer radial surfaces of the packing strips and will be drawn across the working faces thereof by the suction within the box. In the case of deckles 14, similar slots 22 are provided extending longitudinally of the deckle and grooves 23 are formed in the inner face of the outer wall of the deckle extending from the bottom of the slots 22 to the top of the deckle guide wall, the deckle being adjustable through screws 24. The connections between the slots 22 thereof and conduit 16 are made flexible, as indicated at 25. In order that the packing strips may have cushioned engagement with the traveling surface (in the present instance the cylindrical perforated shell), I provide between the bottom of the slots in both the guides 12 and the deckles 14 and the under surface of such packing strips, rubber cushioning strips 26 the edges of which are notched as at 27 to permit the passage of fluid to the grooves 21 or 23 as the case may be.

It will be obvious that by introducing low pressure water to the longitudinal slots 20 or 22, as the case may be, this water will serve both as a means to "float" the packing strips, lubricating their engagement with the walls of the slots in which they are disposed, and to provide at the outer radial surfaces of the strips an excess supply of water which may be drawn across working surfaces by the suction within the box and thus lubricate their engagement with the shell 11. In Fig. 7 I have illustrated a slightly modified method of delivering the water to the working surface of the strip. In this figure the grooves 21 or 23 are eliminated and the packing strip 15a is, itself, made porous or provided with passages 23a through which the fluid may pass from the longitudinal slot 22 toward the traveling surface, said passages extending from the bottom to the top of the packing strips 15a.

It will be obvious that an arrangement of this

type, when employed with a suction roll, will eliminate the use of the usual shower pipe and, for this reason, will eliminate the probability of liquid being thrown outwardly through the holes of the shell against the felt or sheet with which the shell is cooperating.

Since the construction illustrated is obviously capable of considerable modification without departing from the spirit of the invention, I do not wish to be understood as limiting myself thereto except as hereinafter claimed.

I claim:

1. In combination, a traveling perforated surface, a suction box coacting therewith, packing strips longitudinal to the box and deckles having packing strips transverse to the box sealing the box to said traveling surface and defining a suction area on the surface, guides for said packing strips, said guides having slots to receive said packing strips and having the inner faces of the outwardly disposed walls of said slots provided with grooves constituting outlets for liquid, said guides also having longitudinal slots beneath said packing strips communicating with said grooves, resilient means urging said packing strips into engagement with said surface, and means to direct a current of liquid into said longitudinal slots and thence through said grooves toward said traveling surface along those faces of said deckle and longitudinal packing strips which are outwardly disposed as regards said suction area, whereby to lubricate the engagement of the

packing strips with said guides and with said surface and to assist in perfecting the sealing engagement between the box and surface.

2. In combination, a traveling perforated surface, a suction box coacting therewith, packing strips longitudinal to the box and deckles having packing strips transverse to the box sealing the box to said traveling surface and defining a suction area on the surface, guides for said packing strips, said guides having slots to receive said packing strips and having the inner faces of the outwardly disposed walls of said slots provided with grooves constituting outlets for liquid, said guides also having longitudinal slots beneath said packing strips communicating with said grooves, the guides of the deckle strips being adjustable toward and away from one another and being flexibly connected to a source of liquid supply for the longitudinal slots and grooves thereof, resilient means urging said packing strips into engagement with said surface, and means to direct a current of liquid into said longitudinal slots and thence through said grooves toward said traveling surface along those faces of said deckle and longitudinal packing strips which are outwardly disposed as regards said suction area, whereby to lubricate the engagement of the packing strips with said guides and with said surface and to assist in perfecting the sealing engagement between the box and surface.

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