

Nov. 24, 1936.

A. H. STANDLEY

2,062,238

PAPER MACHINERY

Filed Oct. 19, 1934

3 Sheets-Sheet 1

Fig. 1.

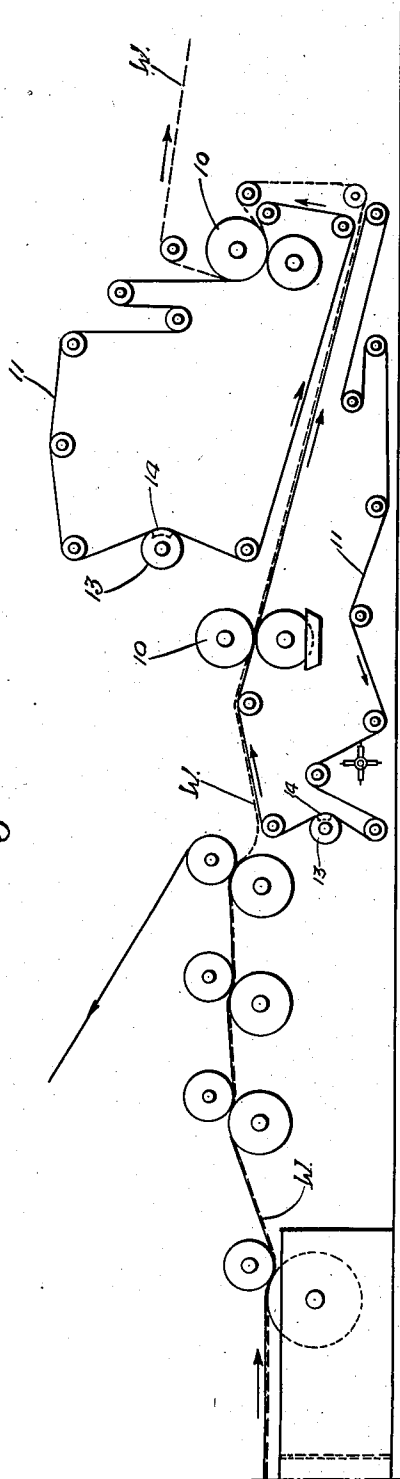


Fig. 10.

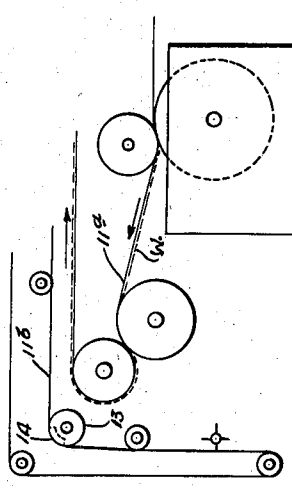
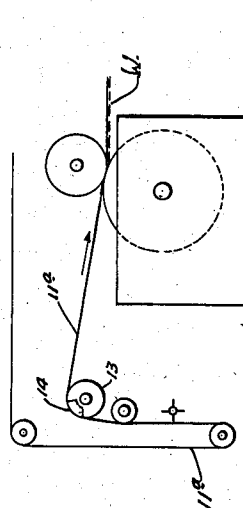


Fig. 9.



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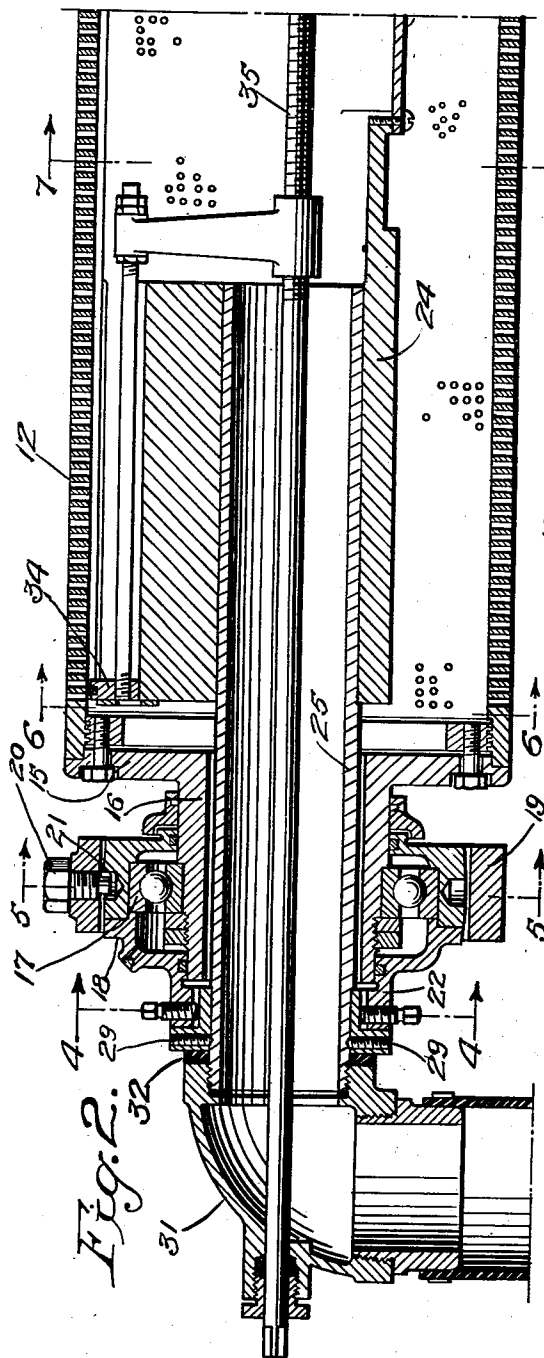
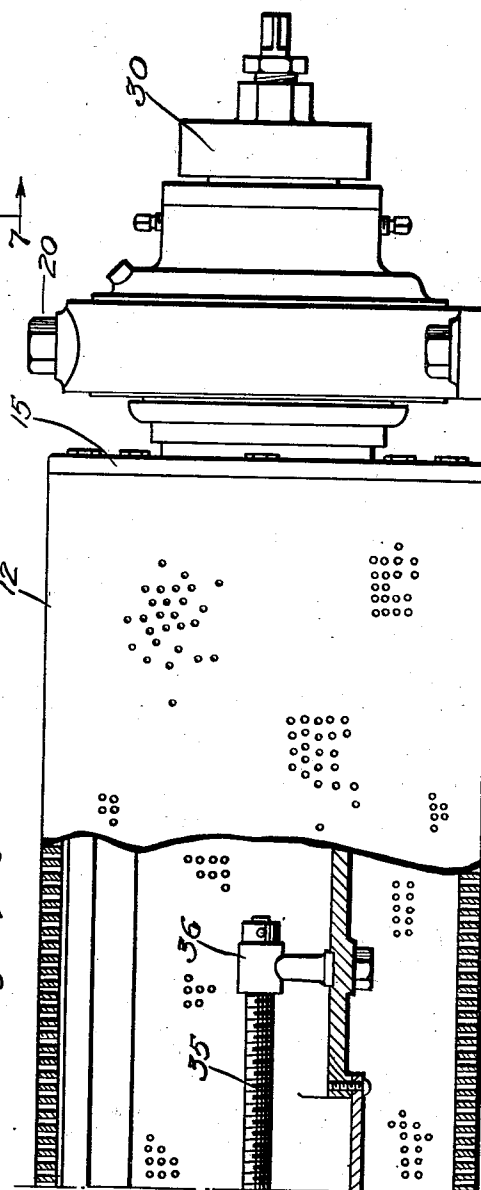
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

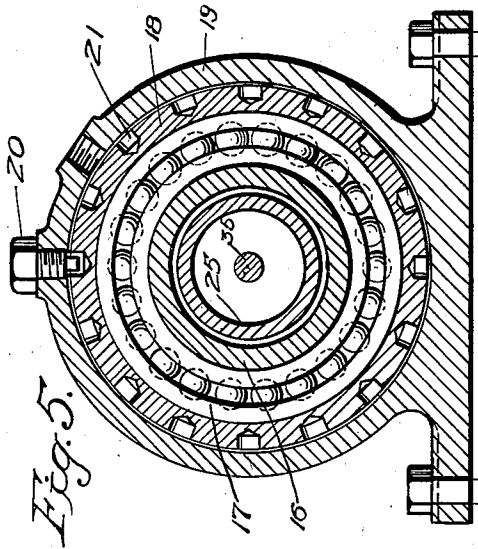


Fig. 5.

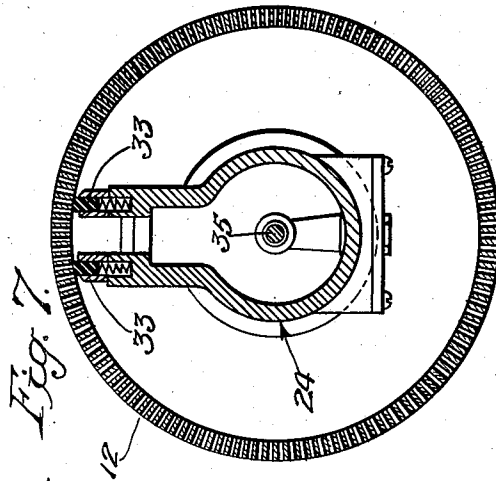


Fig. 7.

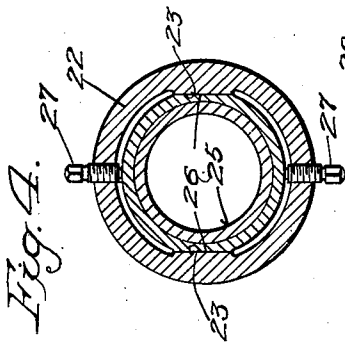


Fig. 4.

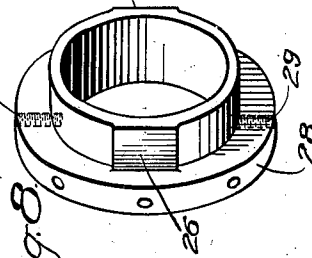


Fig. 8.

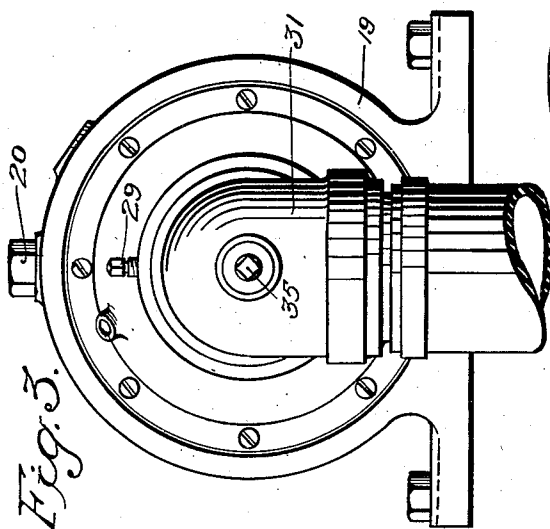


Fig. 3.

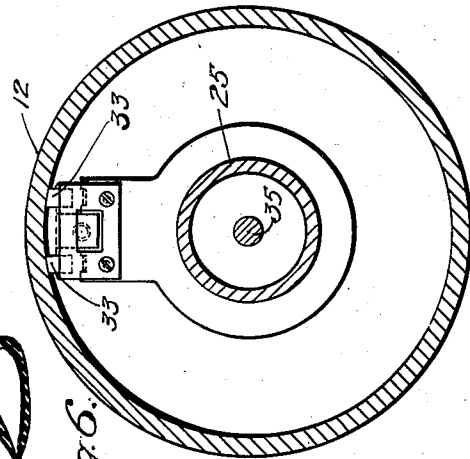


Fig. 6.

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UNITED STATES PATENT OFFICE

2,062,238

PAPER MACHINERY

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ington, Pa., a corporation of Pennsylvania

Application October 19, 1934, Serial No. 749,126

5 Claims. (Cl. 92-49)

This invention relates to paper machinery, and more particularly to the provision of a suction roll for treating the working surface of the carrier felts employed in conveying the paper web through paper machinery.

An important object of the invention is the provision in a construction of this character of an arrangement such that a very light roll offering low friction resistance may be produced and the roll may be so arranged that the shell thereof is propelled by the felt of the machine.

A further object of the invention is the provision of a carrier felt arrangement having a suction roll operating upon the working face thereof, and acting both to clean the working face and to condition the same so that the life of the felt is materially extended.

The invention further resides in the details of construction hereinafter described and fully shown in the accompanying drawings, wherein, for the purpose of illustration, I have shown a preferred embodiment of my invention, and wherein:

Fig. 1 is a semi-diagrammatic view of the press section of a paper machine illustrating the use of suction felt rolls therein;

Fig. 2 is a side elevation partially in section of the felt roll;

Fig. 3 is an end elevation thereof;

Fig. 4 is a section on the line 4-4 of Fig. 2;

Fig. 5 is a section on the line 5-5 of Fig. 2;

Fig. 6 is a section on the line 6-6 of Fig. 2;

Fig. 7 is a section on the line 7-7 of Fig. 2;

Fig. 8 is a perspective view of the suction box collar; and

Figs. 9 and 10 are partially diagrammatic views illustrating respectively application of the suction felt roll to the pick-up felt and top felt of the wet end of a particular machine.

Referring now more particularly to the drawings, the numeral 10 generally designates a press of the press section having a felt 11 traveling through the press rolls thereof and adapted to bear upon one face, hereinafter referred to as the working face of the paper web W formed in the machine. In accordance with my invention, I apply against this working face the rotating shell 12 of what I term a suction felt roll 13, the roll being so disposed with relation to the felt 11 by means of guide rolls that the suction box area 14 of the roll is completely covered by the felt which should, as a matter of fact, well lap this suction area at opposite sides thereof. The shell 13 is of light construction hereinafter more particularly described, and arranged to rotate

freely upon its axis. The suction exerted through the suction box 14 holds the traveling felt firmly against the surface of the shell during its passage over the suction area with the result that the felt provides the drive for the roll. Since, however, the felt laps at opposite sides of the suction area, there is no direct pull upon the felt due to suction action, other than that pull which is exerted through the felt and has a cleaning action thereon. In addition to its cleaning, this suction action tends to free the surface fibre of the felt and restore it to its normal condition.

The form of roll herein illustrated comprises a light shell 12 having heads 15 at its opposite ends, each head having a hollow trunnion 16 mounted for rotation in a bearing 17. The bearing 17 is in turn mounted in a bearing holder 18, and this bearing holder is mounted in a bearing yoke 19 within which it may be rotated. The bearing holder is held in any desired rotatably adjusted position by means of a locating bolt 20 engaging in a selected one of a circumferential series of sockets 21 formed in the periphery of the bearing holder. The bearing holder has a tubular extension 22 at its out-bored end, this tubular extension, as more clearly shown in Fig. 4, having an internal bore formed with diametrically opposed flats 23. The suction box generally designated at 24 has a tubular extension 25, the exterior of which is formed with corresponding flats 26 adapted to engage against the flats 23 and thus hold the suction box against rotation with relation to the bearing holder so that the suction box may be secured in any of a number of adjusted positions which are determined by adjustment of this bearing holder. The position of the tubular extension 25 in a direction parallel to the flats is determined by means of adjusting set screws 27 which extend through the wall of the tubular extension 22 and engage the tubular extension of the suction box. While the contact just described may be a direct contact, it is preferred that the suction box extension have applied thereto a collar 28 upon which the flats are directly formed, this collar being secured in the present illustration by means of set screws 29. Obviously, by rotatable adjustment of the collar with relation to the suction box, still further adjustment of the position of the box may be had. The tubular extension at one end of the suction box is merely capped, as indicated at 30, while the other end thereof receives an elbow fitting 31. Between this fitting and collar a soft packing 32 surrounds the extension and is maintained under compression, so that

the adjustment of the box which would disturb the threaded connection between the elbow 31 and the extension 25 will not permit of leakage. The general construction of the suction box proper corresponds in great measure to that of the ordinary suction roll, comprising a chamber, the longitudinal side walls of which are equipped with spring-pressed packing strips 33 of bakelite with some similar material having a low coefficient of friction and adapted to engage the inner surface of the shell 12 and end-packing deckles 34 of similar material to the packing strips 33 which are adjustable through rotatable screws 35 mounted at their outboard ends in the cap 30 or fitting and at their inboard ends in bearings 36 carried by the lower wall of the suction box. The arrangement just described permits of all necessary adjustment of the roll which is, of course, not as exacting as the adjustment of rolls actually employed with the sheet; while the mounting and general construction provide such a light-weight construction that the drag upon the felt is reduced to a minimum and no injurious effects are experienced.

In Figs. 9 and 10 the suction felt roll 14 is shown as applied to the pick-up felt 11a and top felt 11b of the wet end of the machine. While in the several diagrammatic illustrations provided the felt rolls have been shown in particular locations, it will be obvious that the particular location is a matter of choice, and the suction felt roll may be applied to the felt at any convenient point in its inoperative travel, or that part of its travel in which it does not support or contact the paper web.

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

I claim:

1. Paper-making apparatus, including a traveling endless felt supporting on its operative travel and upon one face thereof a paper web in the process of formation, and a light suction roll directly engaging and exerting suction action on said face of the felt during the return inoperative travel of the felt, said roll comprising a light perforated shell supported on anti-friction bearings and driven at the same speed as, and only by the travel of the felt thereabout, said roll being of a width equal to the width of the felt and being held against movement transversely of the felt, the engagement of the felt with the roll being through the pull of the felt alone.

2. Paper-making apparatus, including a traveling endless felt supporting on its operative travel

and upon one face thereof a paper web in the process of formation, and a light suction roll directly engaging and exerting suction action on said face of the felt during the return inoperative travel of the felt, said roll comprising a light perforated shell supported on anti-friction bearings and driven at the same speed as, and only by the travel of the felt thereabout, the contact of the felt with the roll extending beyond the trailing edge of the suction box of the roll, said roll being of a width equal to the width of the felt and being held against movement transversely of the felt, the engagement of the felt with the roll being through the pull of the felt alone.

3. Apparatus of the type described, comprising a press, an endless felt passing therethrough and adapted to support a paper web on one face thereof during operative travel of the felt and a light suction roll directly engaging and exerting suction action on said face of the felt during the return inoperative travel of the felt, said roll comprising a light perforated shell supported on anti-friction bearings and driven at the same speed, as, and only by the travel of the felt thereabout, said roll being of a width equal to the width of the felt and being held against movement transversely of the felt, the engagement of the felt with the roll being through the pull of the felt alone.

4. Apparatus of the type described, comprising a press, an endless felt passing therethrough and adapted to support a paper web on one face thereof during operative travel of the felt and a light suction roll directly engaging and exerting suction action on said face of the felt during the return inoperative travel of the felt, said roll comprising a light perforated shell supported on anti-friction bearings and driven at the same speed as, and only by the travel of the felt thereabout, the engagement of the felt with the roll continuing beyond the trailing edge of the suction box of the roll, said roll being of a width equal to the width of the felt and being held against movement transversely of the felt, the engagement of the felt with the roll being through the pull of the felt alone.

5. In a suction roll for the purpose described, a light shell having hollow trunnions at its opposite ends, bearings rotatably receiving said shell, rotatably adjustable supports for said bearings, and a suction box for the shell supported by said bearing supports, said bearing supports and suction box having engagement preventing relative rotation thereof while permitting diametral adjustment of the suction box in the shell.

ALBERT H. STANDLEY.

3

CERTIFICATE OF CORRECTION.

Patent No. 2,062,238.

November 24, 1936.

ALBERT H. STANDLEY.

It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the grant, lines 1, 2 and 13, and in the heading to the printed specification, lines 3, 4 and 5, the residence of the inventor and assignee and the name of the assignee should read Down-
ingtown instead of "Downington" as shown by the records of assignments in this office; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of February, A. D. 1937.

(Seal)

Leslie Frazer
Acting Commissioner of Patents.