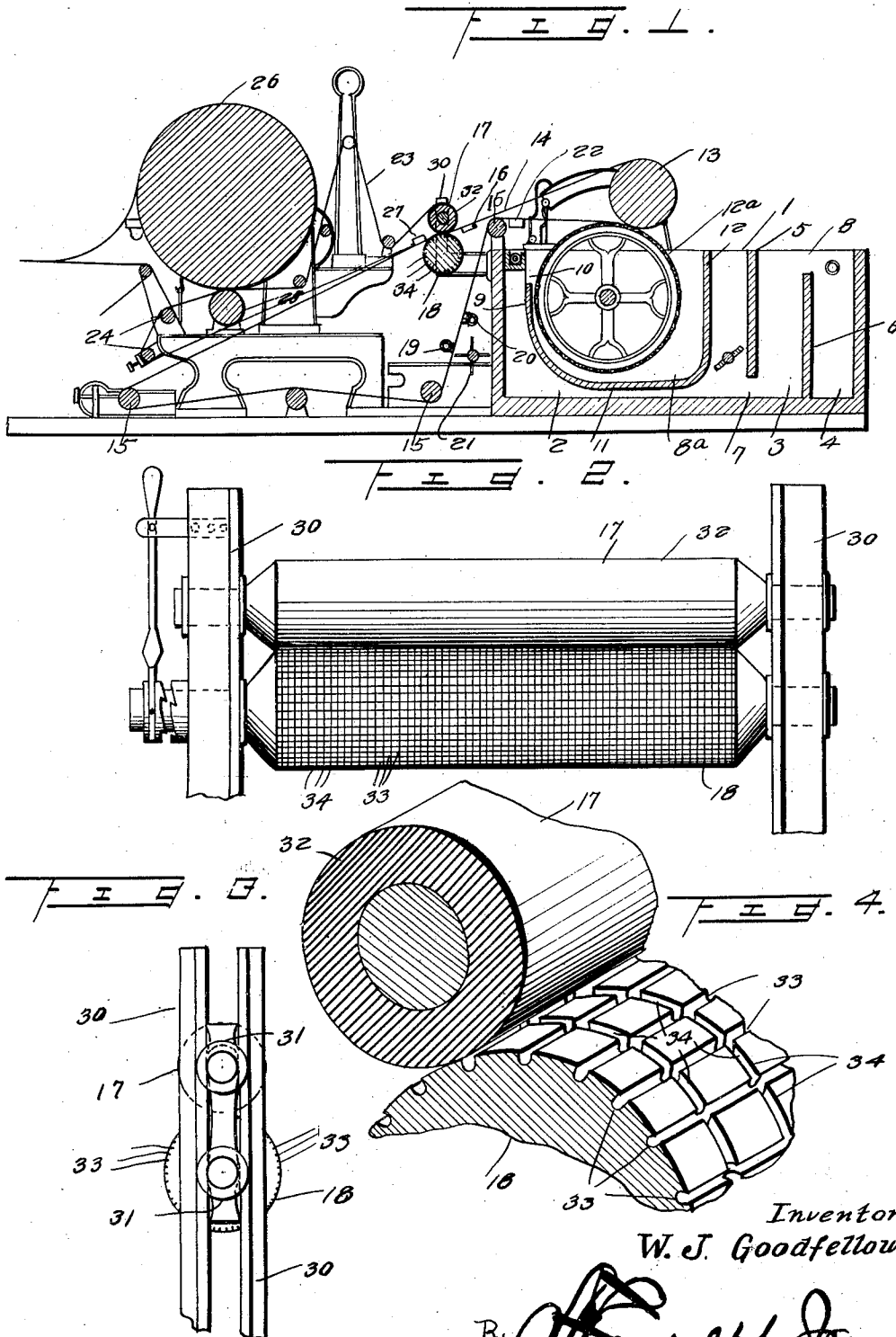


W. J. GOODFELLOW.
PRESS ROLL SET.
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1,369,335.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLARD J. GOODFELLOW, a citizen of the United States, residing at Bentley Springs, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Press-Roll Sets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to press rolls especially adapted to be used upon paper making machines and it consists in the novel features hereinafter described and claimed.

An object of the invention is to provide a set of press rolls, the members of which cooperate with each other to properly position or set the particles of pulp in the sheet of paper as it is being formed without crushing the fiber or texture of the particles and thereby permitting the paper to pass freely between the rolls of the set.

By reason of the fact that the fiber or texture of the pulp is not crushed or compacted at the said rolls, the paper may be used to advantage as binders for cigar fillers inasmuch as the paper will burn freely owing to the fact that the fiber or texture thereof is not compacted or crushed.

With this object in view, the set of press rolls comprises an upper roll made of rubber and having a cylindrical surface, a lower roll made of cast iron and having a peripheral surface which is originally cylindrical and which is divided into a vast number of squares by grooves, some of which are disposed longitudinally of the roll and others circumferentially thereof.

In the accompanying drawing:

Figure 1 is a fragmentary longitudinal sectional view of a paper making machine showing the press rolls in position thereon.

The other figures are detailed views of the press rolls.

The machine to which the press rolls are applied comprises a tank 1 which has its upper side fully open and which is divided up into a large front compartment 2 and small rear compartments 3 and 4 by partitions 5 and 6. The partition 5 which has its upper edge flush with the upper side of the tank 1 terminates short of the bottom of the tank to provide an opening 7 which establishes communication between the compartments 2 and 3. The partition 6 which

has its lower edge flush with the bottom of the tank 1 terminates short of the upper edge of the tank to provide an opening 8 which establishes communication between the upper ends of the compartments 3 and 4. A pulp vat 8^a is arranged within the compartment 2. The front wall 9 of the pulp vat 8^a is spaced from the front wall of the tank 1 and its upper end terminates short of the upper side of the tank 1 to provide an opening 10 through which the pulp flows into the vat. The lower end of the front wall 9 of the vat 8^a and the bottom wall 11 thereof are curved and spaced from the bottom wall of the tank 1. The rear wall 12 of the vat 8^a is spaced from the partition 5. The front wall, the bottom and the partition 5 of the tank 1 together with the adjacent walls of the vat 8^a provide a substantially U-shaped compartment about the pulp vat. A mating cylinder 12^a of any well known type is journaled within the pulp vat 8^a concentrically with relation to the curved bottom wall 11 and the curved portion of the front wall 9 of the vat. A couch roll 13 cooperates with the mating cylinder 12^a.

The first felt 14 passes about the couch roll 13 and about the guide rolls 15. The top run of this felt passes over a suction box 16 and between a first set of press rolls 17 and 18. These rolls 17 and 18 and their characteristics and features are the essentials of the present invention. The bottom run of this felt passes between sprays 19 and 20 and is acted upon by a beater 21 and passes over a suction box 22. A second felt 23 passes over the upper press roll 17, over guide rolls 24 and between a second set of press rolls 25 and 26. The bottom run of this felt passes under a suction box 27 which is located in advance of the first set of press rolls 17 and 18.

The shafts of the rolls 17 and 18 are journaled between standards 30 which are mounted upon or formed integral with the frame of the machine. Suitable boxes 31 may be provided for the reception of the end portions of the shafts of the rolls and which boxes may be adjustably positioned or movably mounted between the standards. The roll 17 is somewhat less in diameter than the roll 18 and the roll 17 is provided with a peripheral portion 32 of rubber and which is of cylindrical configuration. The roll 17 rests by its weight upon the felt and material which passes between the rolls 17 and

18. The roll 18 is made of cast iron and its peripheral portion originally is cylindrical. The peripheral portion of the roll 18 is divided into a number of squares by longitudinally disposed grooves 33 intersected by circumferentially disposed grooves 34. As will be seen these grooves are disposed in cruciform relation with respect to each other and consequently they divide the peripheral surface of the roll 18 into squares as hereinbefore stated. The outer surfaces of these squares conform with the original cylindrical configuration of the roll 18.

It will be seen that as the layer of pulp is carried by the felt between the rolls 17 and 18 the layer is subjected to pressure whereby some of the moisture is expelled from the pulp and this moisture may drain from the roll 18 through the grooves 33 and 34. The portions of the sheet of pulp which come in contact with the surfaces of the squared portion between the said grooves is acted upon by the soft rubber roll 17 which subjects the sheet to sufficient pressure and inasmuch as the peripheral portion 32 of the roll 17 is soft, the fiber or texture of the pulp is not crushed and the sheet passes freely between the rolls 17 and 18 and is in condition to be acted upon subsequently by other features of the paper making machine. As hereinbefore stated these rolls are especially designed in the manufacture of paper intended to be used as binders for the fillers of cigars and in such paper it is essential that a product be produced which will burn freely and therefore the texture

or fiber of the pulp must not be compacted to an excessive degree nor should the fiber be crushed or mutilated or the strength of the sheet otherwise impaired.

Having thus described my invention, what is claimed is:

1. Set rolls comprising an upper roll having a peripheral portion of soft pliable material, a lower roll of metal having its peripheral portion divided by longitudinally and circumferentially disposed grooves into squares.

2. Set rolls comprising an upper roll having a peripheral portion of soft pliable material, a lower roll of metal and having its peripheral portion divided by longitudinally and circumferentially disposed grooves into squares, the lower roll being of greater diameter than the upper roll.

3. Press rolls comprising an upper roll having its peripheral portion of soft pliable material and a lower roll of metal having its peripheral portion originally cylindrical, said peripheral portion of the lower roll being divided by longitudinally and circumferentially disposed grooves into squares, whereby the surfaces of the squares are curved and in conformity with the original cylindrical surface of the lower roll.

In testimony whereof I affix my signature in presence of two witnesses.

WILLARD J. GOODFELLOW.

Witnesses:

J. B. YOUNG,

Mrs. JAMES DECKER.