A. E. CURRIER.

MANUFACTURE OF MOISTUREPROOF CRAPED PAPER.

APPLICATION FILED JULY 17, 1919.

1,390,276. Patented Sept. 13, 1921.

Fig. 1.

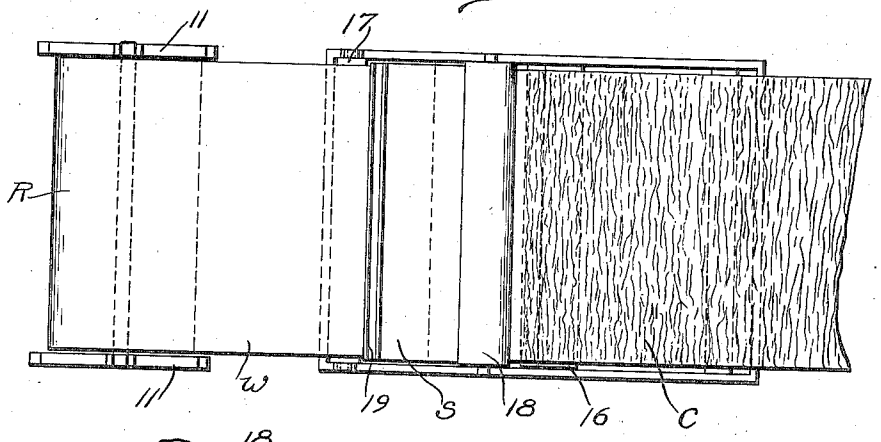



Fig. 3.

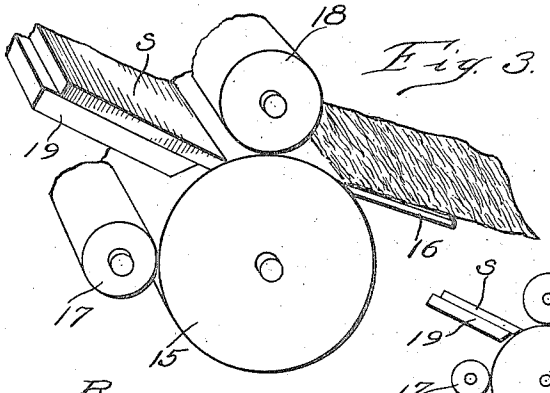
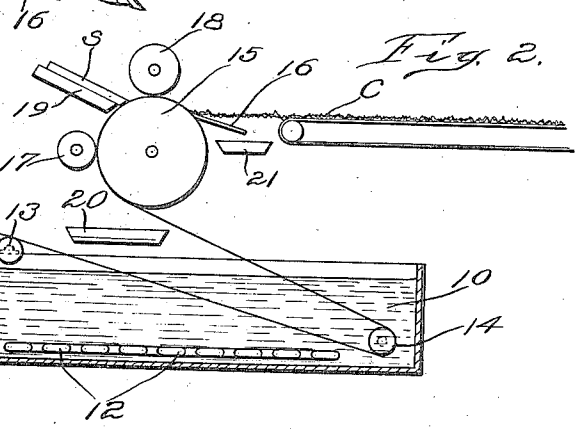



Fig. 2.




Inventor:
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by Clyde L Rogers
his atty.

# UNITED STATES PATENT OFFICE.

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## MANUFACTURE OF MOISTUREPROOF CRAPED PAPER.

1,390,276. Specification of Letters Patent. Patented Sept. 13, 1921.

Application filed July 17, 1919. Serial No. 311,437.

*To all whom it may concern:*

Be it known that I, ANDREW E. CURRIER, a citizen of the United States, and resident of Millis, county of Norfolk, Commonwealth of Massachusetts, have invented an Improvement in the Manufacture of Moistureproof Craped Papers, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts in each of the several views.

This invention relates to the manufacture of paper for wrapping, packing, case lining and like uses that is craped or crinkled to impart a stretchable quality to the paper whereby its tendency to break under local strains and stresses is greatly reduced. More particularly the invention relates to the manufacture of a craped wrapping or lining paper that is also treated with waterproofing preparation capable of rendering the paper wholly or largely moisture-proof. To this end, the invention consists in an improved method of incorporating a moisture-resisting substance such as paraffin with the paper simultaneously with the craping and as an incident of the craping operation.

It has heretofore been proposed to add a proportion of paraffin oil to the hot bath in which the paper to be craped is immersed just prior to the craping operating, but this has resulted in the taking up of too much oil and in an uneven manner by the moving paper web, and the oil would hence not dry out and the surface of the sheet be left with a greasy appearance,—and also showing uneven distribution of the paraffin. I have found that by causing a slab or block of paraffin wax to contact with, and press against, the surface of the moving web while it is hot and moist after immersion in the bath and just before it reaches the craping station, the sheet is caused to take up just the right amount of paraffin, *i. e.*, in practice, about ten per cent., and with a very even distribution.

Further than this, I have found that this treatment of the hot moistened sheet with the paraffin wax results in a better craping action by the doctor, and that the crape effect produced has more elasticity, and that the paper so produced is even more pliable, conformable, and generally adapted for wrapping and like uses than is ordinary craped paper,—in addition to the waterproof property attained. The foregoing and other objects and advantages of the invention will more fully appear from the following detailed description and the distinctive features of novelty will be pointed out in the appended claims.

Referring to the drawings:

Figure 1 is a plan view showing the essential portions of a craping mechanism embodying the invention.

Fig. 2 is a diagrammatic side view thereof, and

Fig. 3 is a diagrammatic perspective further illustrating the working parts.

10 indicates a bath tank into which the paper web W to be craped is drawn from a supply roll R journaled on suitable supports 11. The tank 10 may be equipped with any suitable means for heating the water or solution therein, this being shown as steam pipes 12 in the bottom of the tank. The paper web is guided around rolls 13, 14 downward through the tank and lengthwise thereof so as to be immersed in the hot liquid for the requisite period. Thence it is directed around a smooth surfaced roll 15 preferably of steel as usual, and while clinging to this roll, engaged and removed therefrom by a doctor blade 16 in the usual manner, this blade presenting a blunt edge which skuffs back and imparts the well known crinkled or craped effect in the paper as indicated at C, the craped web being removed by suitable means (not shown). As shown, the disposition of parts is such that the paper web engages around a substantial angular extent of the smooth surfaced roll 15, *i. e.*, somewhat more than half the circumference thereof, and spaced apart presser rolls 17, 18 are provided to press upon the surface of the paper clinging to the roll 15. The presser roll 17 engages the paper shortly after it contacts with the roll 15 and presses the paper evenly and uniformly to the surface of the smooth roll 15 removing air pockets and also pressing out excess moisture. Just beyond and above the roll 17 is mounted an inclined platform 19 presenting a smooth top surface extending down into proximity with the surface of the roll 15. This platform is adapted to receive a block or slab S of paraffin wax and the incline of its surface is such that the wax slab will slide down the same into moderate pressing contact with the surface of the paper on the

roll 15, which it will be understood is hot and moist from its just preceding immersion in the hot bath.

The other pressure roll 18 is mounted just beyond the platform 19 and as shown directly above the roll 15. This roll pressing on the paper sheet further insures close and even adherence to the smooth surfaced roll and facilitates the even distribution of the wax and the striking-in thereof into the pores and interstices of the paper. Thence the paper advances to the doctor 16 where it is craped as usual. I preferably provide drip pans 20, 21 suitably located to catch any drippings of the melted wax from the wax applying station or the doctor, these preventing any dripping back of the wax into the bath tank which would result in a deleterious effect from the taking up of such drippings by the web and causing an uneven application of the wax. The slide platform 19 may be mounted at a suitable angle for the purposes having in mind the speed of the paper web, the hardness of the wax, and other considerations; in practice, I have found that an angle of about thirty degrees is suitable in most cases to cause proper contact of the wax slab with the paper surface and results in the melting and taking up of the wax in correct proportion for the results required. This showing of the mounting or holder for the slab as being an inclined gravity platform is to be understood as merely illustrative and typifying any suitable means for causing the wax slab to advance automatically so as to keep in continuous contact with the moving surface of the paper web on the smooth surfaced roll. Therefore in general, I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

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

1. The combination with paper craping apparatus comprising a moistening tank and a craping roll and doctor, of means for applying waterproofing substance to the paper consisting in a mounting for a wax block constructed and arranged to cause continuous contact of the wax block with the paper on said roll just prior to the craping thereof.

2. The combination with paper craping apparatus comprising a moistening tank and a craping roll and doctor, of means coöperative with said roll for pressing the paper evenly thereto, and means for mounting and holding a block of wax or the like to engage and press continuously against the surface of the paper on said roll just prior to the craping thereof.

3. The combination with paper craping apparatus including a smooth surfaced craping roll and paper moistening means, of means for mounting and holding a block of wax or the like to press constantly upon the surface of the paper on said roll just prior to the craping thereof.

4. The combination with paper craping apparatus including a smooth surfaced roll and moistening means, of an inclined platform adapted to hold a block of wax or the like to move thereon by gravity and engage continuously the surface of the paper web just prior to the craping thereof.

5. The herein described method which consists in first moistening and heating paper, then subjecting the paper surface while still hot to engagement with a wax mass in solid form, and then craping the paper.

In testimony whereof, I have signed my name to this specification.

ANDREW E. CURRIER.