

UNITED STATES PATENT OFFICE.

E. B. BINGHAM, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN THE PROCESS OF MANUFACTURING TWINE FROM PAPER.

Specification forming part of Letters Patent No. **46,208**, dated February 7, 1865.

To all whom it may concern:

Be it known that I, E. B. BINGHAM, of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Process for Manufacturing Twine from Paper; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same.

Owing to the high price of the stock from which twine for tying up parcels and for similar purposes was previously wholly manufactured, there has recently been used in this country a new material to serve as a stock for that purpose—to wit, tissue Manila paper. At present this paper is cut into strips of a proper width, and then twisted into twine of the required size by an ordinary spinning-frame or any suitable spinning machinery. This twine as at present manufactured answers tolerably well for ordinary purposes, if kept free from moisture. It is of sufficient strength for tying up small parcels; but if subjected to a slight moisture it instantly breaks. This contingency is the only objection to the paper twine, which would otherwise become generally used. At present it is used in the majority of cases where it can be with safety, and in some cases where it should not be employed, causing the purchaser or carrier of parcels great annoyance and inconvenience.

The object of my invention is to manufacture this paper twine by a new process, which will render the same, if not entirely water-proof, sufficiently so to resist moisture in an eminent degree, and thereby obviate the difficulty above alluded to.

My invention consists in adding to the pulp in the process of manufacturing the paper a water-proof sizing. Shellac dissolved in alcohol, or an alkali commonly termed "shellac varnish," will answer the purpose; or a sizing may be applied to the wet or green paper while on the frame or web, or at any time previous to the passing of the same between the last heated rollers. This paper thus manufactured, whether sized in the pulp or in the unfinished sheet, is cut into strips and twisted into twine while in a moist state before it becomes dried.

In order to manufacture an even twine—

that is to say, of uniform thickness throughout—it is essential that the paper be moist. The practice at present is to moisten the dry paper just previous to the twisting operation, for it will be understood that the twine manufacturers all manufacture paper twine from finished marketable paper. The moistening of the dry paper just previous to twisting assists the twisting operation; but the twine does not have that smooth appearance, nor the compactness nor toughness, that mine has, owing to the lack of homogeneity of the fiber, for paper when dried by the heated rollers has its fibers all smoothed down, and temporary subsequent moisture will tend to destroy this smoothness.

My improvement produces a very strong, smooth, and even twine, and the water-proof sizing, in consequence of being mixed with the pulp or applied to the green or moist paper on the frame or web of the machine, becomes incorporated with all the fibers of the twine or mass, and while rendering the twine water-proof or enabling it to resist moisture sufficiently for ordinary use, or the purpose for which it is designed, will not make the twine at all rigid or stiff, nor liable to crack or shell off, as would be the case were it applied externally after manufacture.

It will not here be necessary to mention any apparatus or machinery for cutting and spinning the paper, inasmuch as any of the spinning-frames now in use for similar or analogous purposes may be used, and also any proper cutting apparatus.

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

In the manufacture of twine from paper, adding a water-proof sizing to the paper pulp or applying the same to the paper while the latter is in a moist or green state on the frame or web previous to its passage through the final heated pressure-cylinders, and previous to its being cut into strips and receiving its twist, as herein set forth.

E. B. BINGHAM.

Witnesses:

B. HOOGLAND,
JOHN H. WHITE.