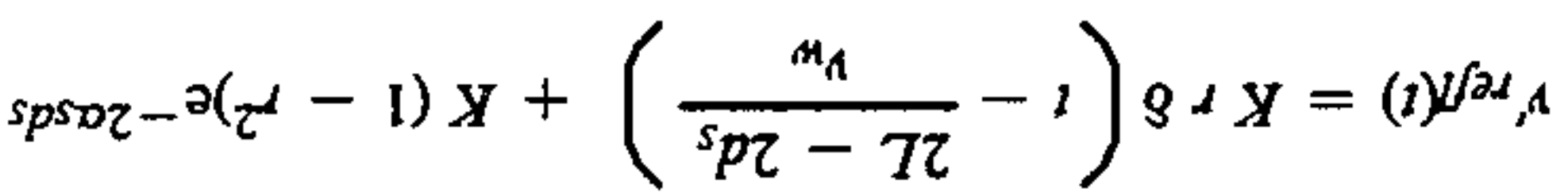


8 PT.

Carbostyryl derivative or a pharmaceutically acceptable acid addition salt thereof, having excellent platelet aggregation inhibitory effect, calcium antagonism, hypotensive effect and phosphodiesterase inhibitory effect are useful as prophylactic or treating agents for thrombosis, circulation improving agents for coronary blood flow such as coronary vasodilators, hypotensive agents and phosphodiesterase inhibitors. Furthermore, the carbostyryl derivatives are weak in heart rate increasing activity and also in cardiac muscle contraction increasing activity, and the carbostyryl derivatives are useful

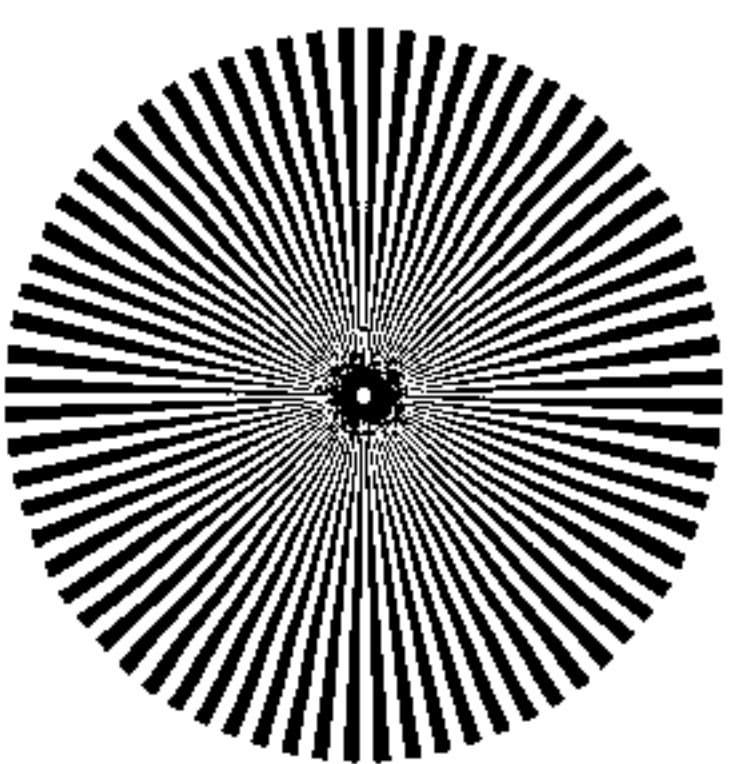
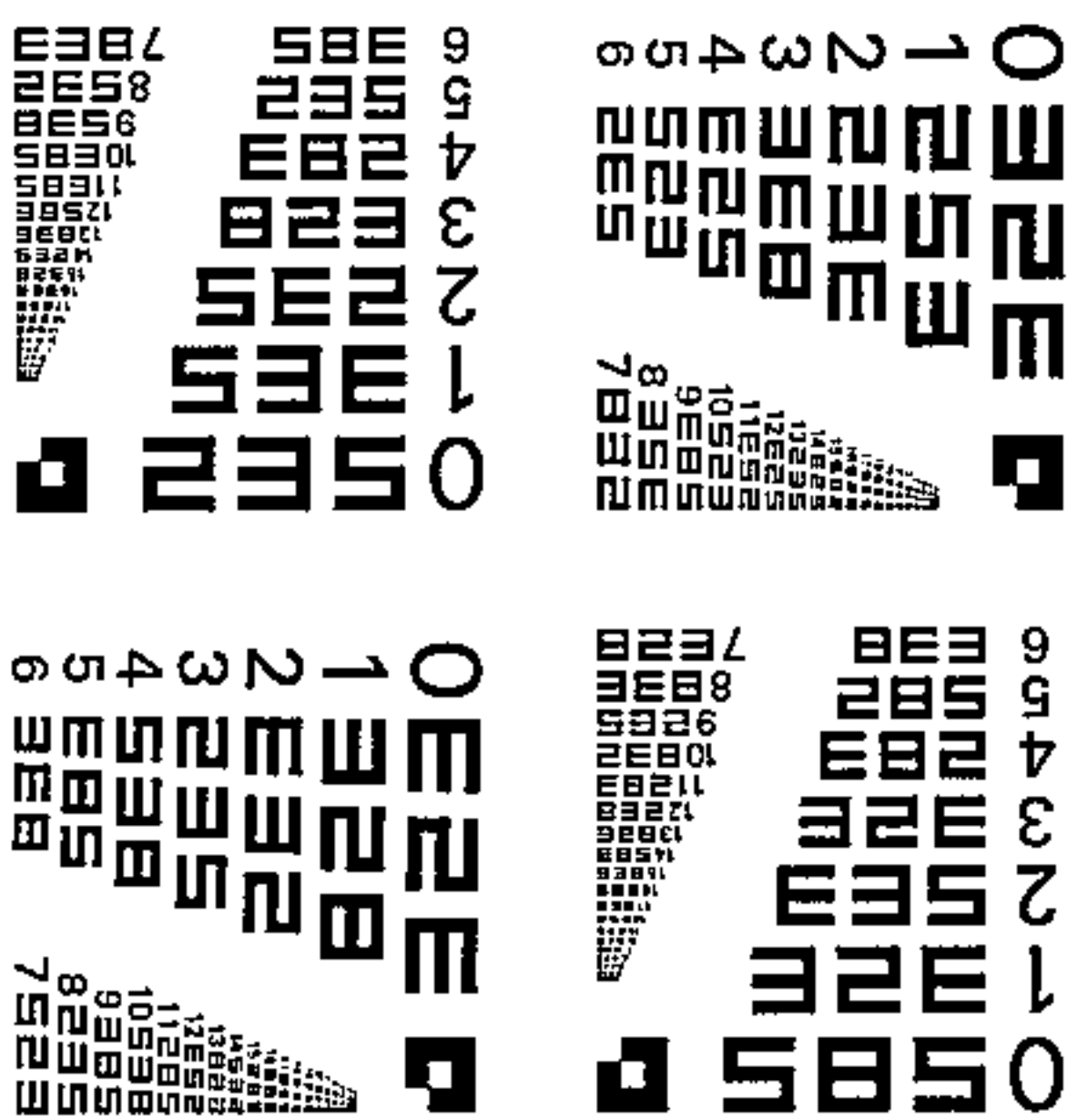

$$(K_1x + K_2y + K_3z + T)(K_1'x + K_2'y + K_3'z + T') = 0$$

Carboxtyril derivative or a pharmaceutically acceptable acid addition salt thereof, having excellent platelet aggregation inhibitory effect, calcium antagonism, hypotensive effect and phosphodiesterase inhibitory effect are useful as prophylactic or treating agents for thrombosis, circulation improving agents for coronary blood flow such as coronary vasodilators, hypotensive agents and phosphodiesterase inhibitors. Furthermore, the carboxtyril derivatives are weak in heart rate increasing activity and also in cardiac muscle contraction increasing activity, and the carboxtyril derivatives are useful



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PATENT AND TRADEMARK OFFICE

# IMAGE SYSTEM TEST TARGET



$r_1(L_1)$	$r_6(L_3)$	$r_7(L_4)$
$K = 1.0$	$K = 1.0$	$K = 0.0$
$C_2 = 0.0$	$C_2 = 0.0$	$C_2 = 0.0$
$C_4 = -0.15691 \times 10^{-6}$	$C_4 = +0.95381 \times 10^{-7}$	$C_4 = -0.22891 \times 10^{-5}$
$C_6 = -0.40068 \times 10^{-10}$	$C_6 = -0.73871 \times 10^{-10}$	$C_6 = +0.12283 \times 10^{-9}$
$C_8 = +0.21016 \times 10^{-13}$	$C_8 = +0.12280 \times 10^{-13}$	$C_8 = +0.84230 \times 10^{-13}$
$C_{10} = -0.37685 \times 10^{-17}$	$C_{10} = -0.33177 \times 10^{-17}$	$C_{10} = -0.20592 \times 10^{-16}$
$f_1 = 314.6$		
$f_2 = 88.0$		
$f_3 = -481.2$		
$f_4 = -99.6$		



W. MATHER.

APPARATUS FOR STEAMING AND AGING PRINTED FABRICS.

No. 189.371.

Patented April 10, 1877.

Fig. 2.

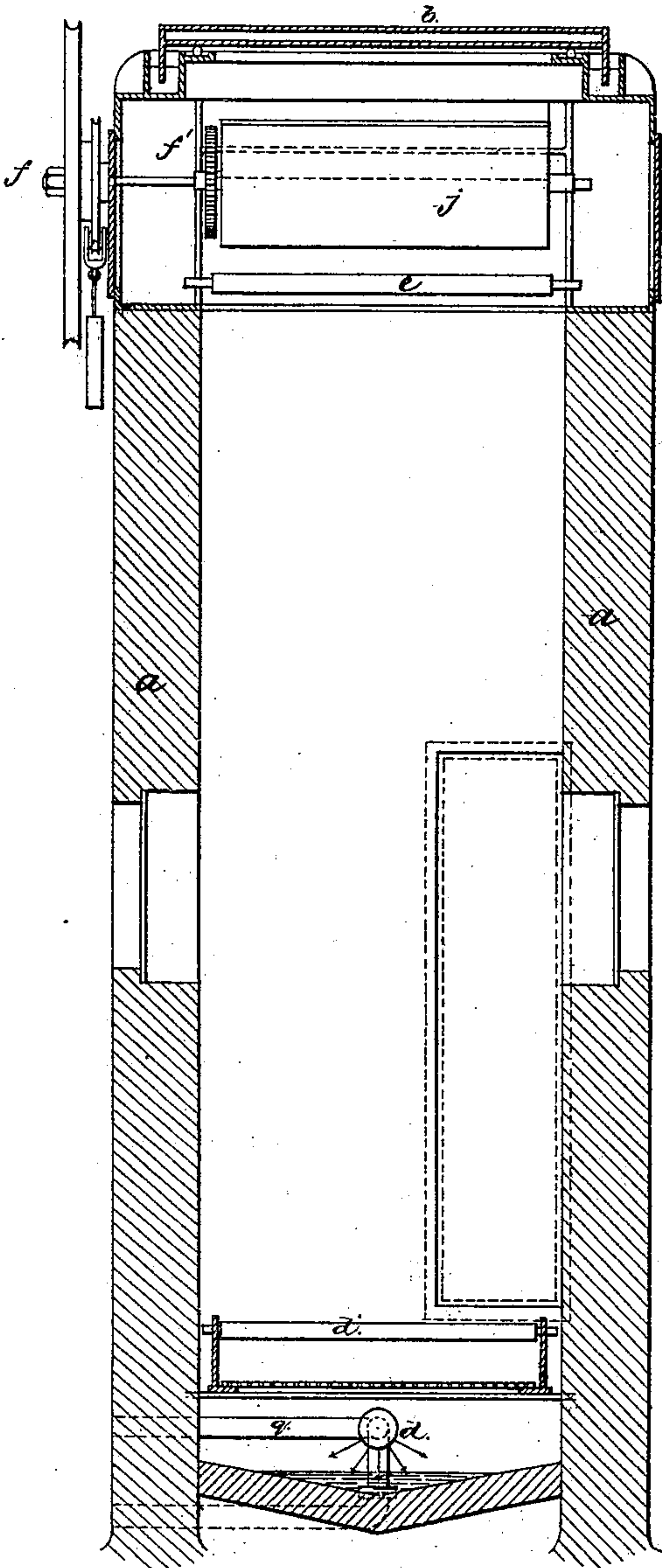
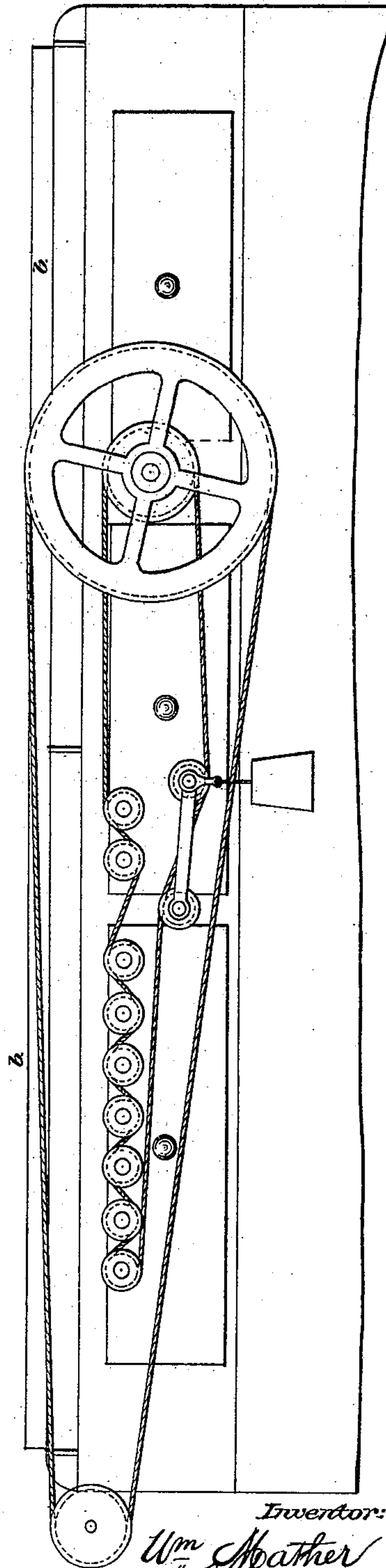


Fig. 3.



Attest:  
Colon Kemmer  
Char. A. Pettit

Inventor:  
Wm Mather  
Per. [Signature]  
Attorneys



# UNITED STATES PATENT OFFICE

WILLIAM MATHER, OF SALFORD, ENGLAND.

## IMPROVEMENT IN APPARATUS FOR STEAMING AND AGING PRINTED FABRICS.

Specification forming part of Letters Patent No. 189,371, dated April 10, 1877; application filed November 25, 1876.

*To all whom it may concern:*

Be it known that I, WILLIAM MATHER, of the firm of Messrs. Mather & Platt, of Salford, in the county of Lancaster, in England, engineer, have invented certain new and useful Improvements in Process and Apparatus for Steaming and Aging Printed Fabrics; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawing, forming part of this specification.

My invention consists, first, in aging printed fabrics, in order to fix the colors, by the alternate application of heat and moisture; and, secondly, in an improved apparatus or arrangement of heated and other rollers in a closed steaming-chamber, whereby the processes of steaming and aging printed fabrics are performed continuously; and in order that my invention may be fully understood and readily carried into operation I will proceed to describe the accompanying sheet of drawings, reference being had to the figures and letters marked thereon.

Figure 1 is a longitudinal sectional elevation, and Fig 2 is a transverse section, of my improved apparatus for steaming and aging printed fabrics. Fig. 3 is a side elevation of a fragment or portion of the apparatus, showing the arrangement of pulleys and bands for communicating motion to the drying and heating rollers.

*a a* is a closed steaming-chamber, made of brick or other suitable material, and *b* is a steam-jacket forming the roof thereof. The sides and ends of the jacket are supported on balls, to allow for expansion and contraction, and there are flanges all round which dip into troughs to form a water-joint. *d* is a perforated pipe, placed near the floor of the steaming-chamber *a*, and this pipe is supplied with moist steam from a steam-saturator or from other convenient source. The moist steam is conveyed to the pipe *d* by the pipes *g*. The steam entering the chamber *a* is simply a vapor without pressure, having only to supply moisture to the fabrics. The heat is supplied mainly by the heated rollers *j*. The latter are preferable made of copper, and driven by the shaft *f*, which is connected with them through the medium of the gears *f'*,

Fig. 1. Immediately below the heated rollers *j* are the rollers *e e*, and beyond or at the right of the rollers *j* are the rollers *m*, which are driven by a band from a pulley on the shaft *f*. Between the rollers *m* are the small rollers *m*<sup>1</sup>, and below them are the rollers *m*<sup>2</sup>. Above the perforated pipe *d* are the rollers *d'*. All the rollers, *e*, *m*, *m*<sup>1</sup>, *m*<sup>2</sup>, and *d'*, are made by preference of sheet copper, and the ends are left open for the circulation of the steam. At each end of the chamber is a steam-tight door, and at the sides are windows to gain access to the chamber and to examine the progress of the work. The printed fabric is fed into the steaming-chamber *a*, between the heated tubes or rollers *h*, then under the steam-chest *i*, and then under the guide-roller *s*, from whence it passes over the rollers *s'* placed under the steam-chest *b*. From the roller *s'* the fabric descends to the first roller *d'*, near the floor of the chamber. It then rises over the first roller *e*, and again descends to the second roller *d'*, and so proceeds until it is taken around the first heated roller *j*, from whence it proceeds, as shown by the lines and arrows, until it has passed over or under all the heated and other rollers in the chamber *a*, or as many of them as may be required, after which the fabric, being sufficiently steamed and aged, is conveyed out of the chamber through the aperture at which it entered, and is then laid in folds by an ordinary plaiter, or it is otherwise disposed of.

The action of the heated rollers is to partially dry and heat the printed fabric passing around them. The fabric on leaving one roller is thus prepared to absorb the steam in the chamber before it reaches the next heated roller, where the same drying and heating action takes place, and these operations are repeated as many times as may be required to fix the colors on the fabrics.

The operation of the apparatus, being continuous, effects a great saving of time, and produces better results than can be obtained by any other means. It also economizes steam and labor. It is evident that the degree of moisture and the temperature can be regulated according to the fabrics under operation.

Having thus stated the nature of my inven-



tion, and described a convenient mode of performing the same, I wish it to be understood that I do not intend to limit myself to the number or the arrangement of the heated and other rollers employed, as the same may be considerably varied or modified according to the quality or class of fabrics to be operated upon.

What I claim herein as new, and desire to secure by Letters Patent of the United States, is—

1. The process of fixing the colors of printed fabrics, consisting in the alternate application of heat and moisture, substantially as set forth.

2. The improved apparatus for aging or

fixing the colors of printed fabrics by the alternate application of heat and moisture, consisting of a case or chamber, *a*, provided with perforated steam-induction pipe and heated rollers, located respectively at bottom and top of the case or chamber, and other rollers *e d'*, for carrying the fabric, in the manner described.

In testimony whereof I have hereunto set my hand before two subscribing witnesses.

W. MATHER.

Witnesses:

H. B. BARLOW,  
*Manchester.*

E. S. BARLOW,  
*Manchester.*