(No Model.) 3 Sheets—Sheet 1.

J. G. McCARTER.

MACHINE FOR CUTTING CLOTH INTO STRIPS.

No. 404,645. Patented June 4, 1889.

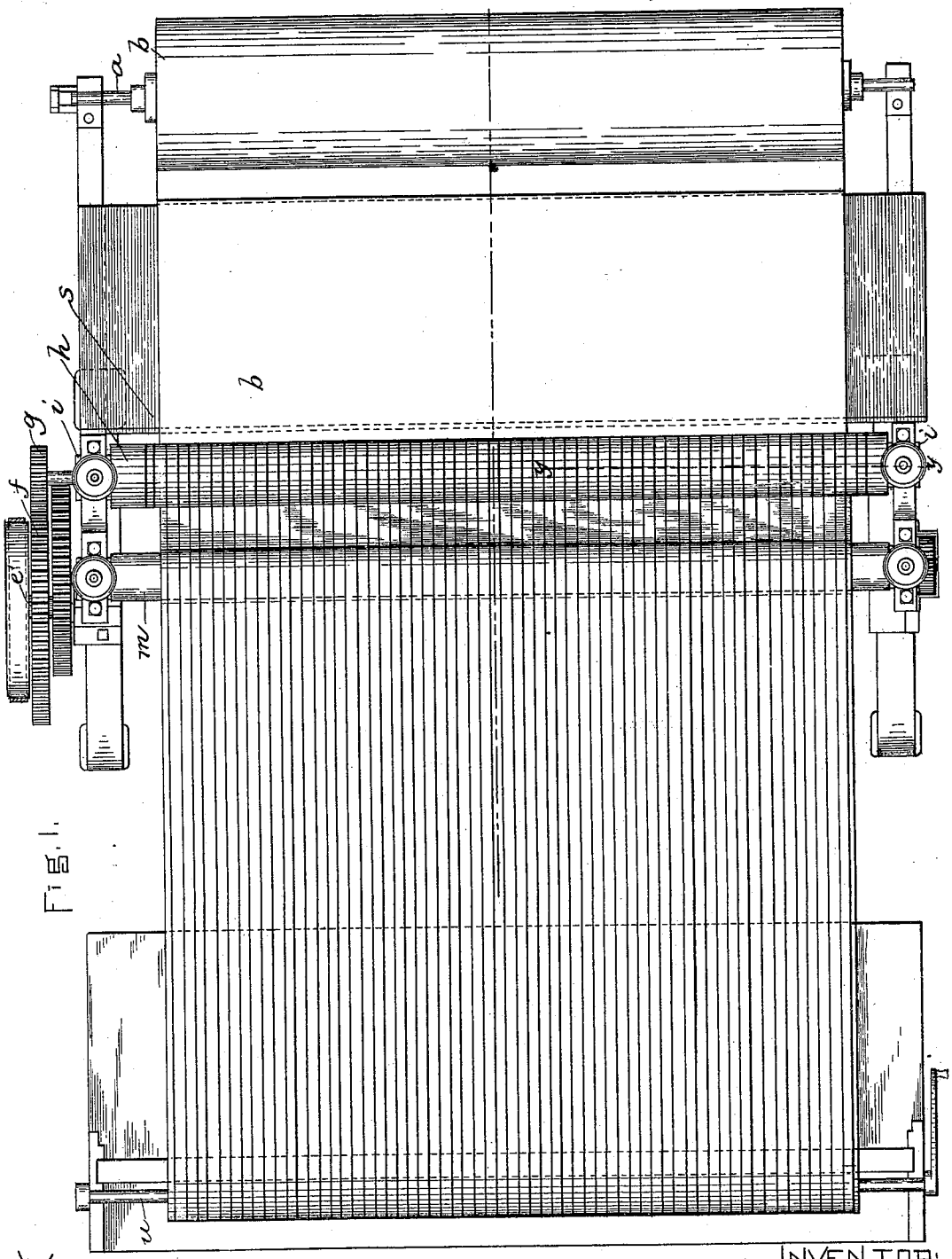


Fig. 1.

WITNESSES.
Chas. E. Emerson
W. B. Ramsay.

INVENTOR:
J. G. McCarter
by Wright Brown Quinby & Atty

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

J. G. McCARTER.

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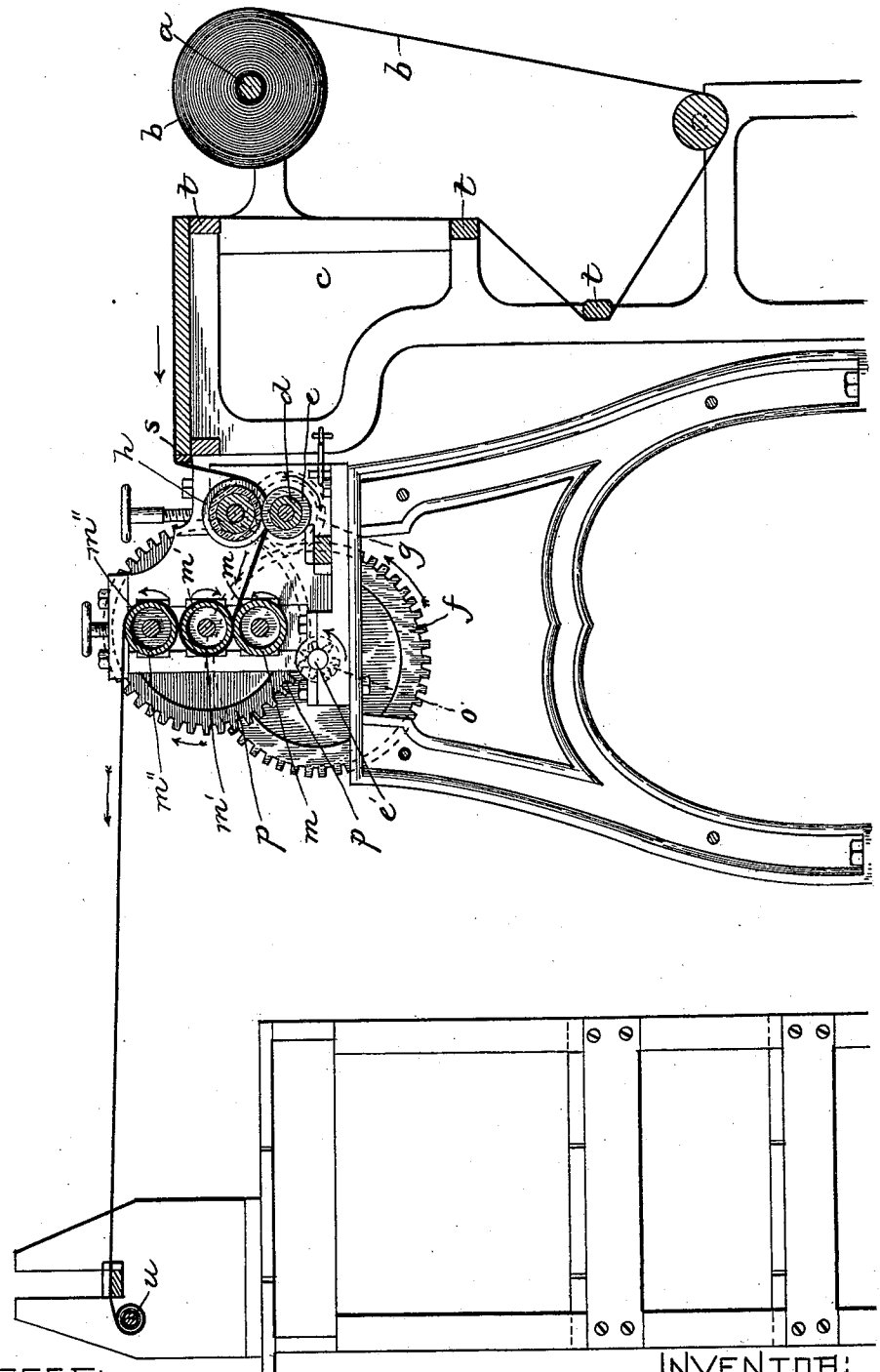


FIG. 2.

WITNESSES:
Philip Emerson
W. C. Ramsay

INVENTOR:
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(No Model.) 3 Sheets—Sheet 3.

J. G. McCARTER.

MACHINE FOR CUTTING CLOTH INTO STRIPS.

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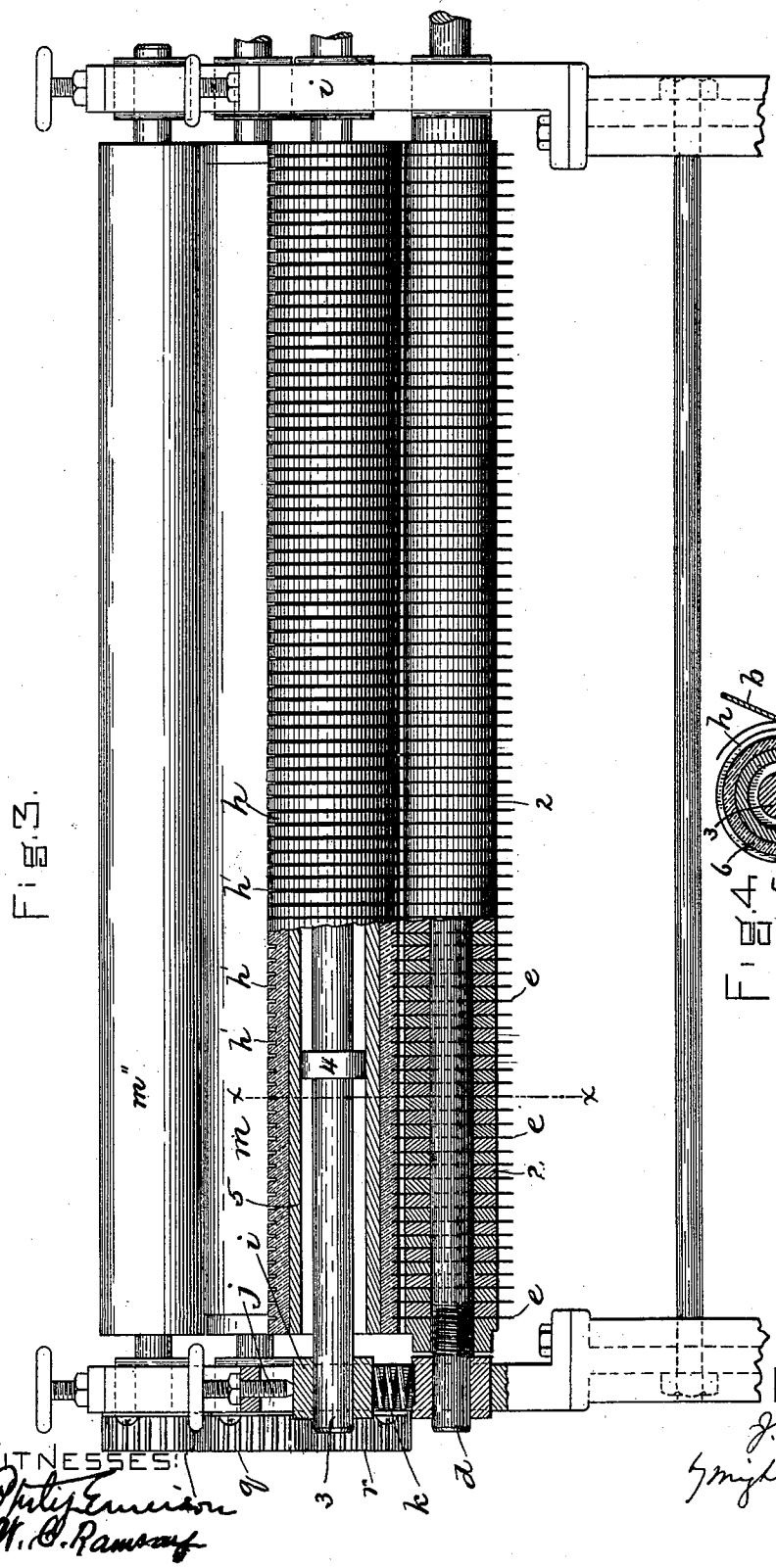


Fig. 3.

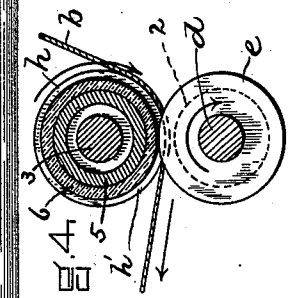


Fig. 4.

WITNESSES:
Philip Emerson
H. B. Ramsay

INVENTOR:
J. G. McCarter
by Wright Brown Quinby & Otty.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JOHN G. McCARTER, OF BOSTON, MASSACHUSETTS.

MACHINE FOR CUTTING CLOTH INTO STRIPS.

SPECIFICATION forming part of Letters Patent No. 404,645, dated June 4, 1889.

Application filed January 12, 1889. Serial No. 296,189. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. McCARTER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Cutting Sheet Material into Strips, of which the following is a specification.

This invention has for its object to provide improved means for cutting a sheet or web of cloth or like flexible material into narrow strips; and it consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top view of my improved machine. Fig. 2 represents a longitudinal section of the same. Fig. 3 represents an end view, partly in section, on line *y y*, Fig. 1. Fig. 4 represents a section on line *x x*, Fig. 3.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents a mandrel, which supports the roll or web *b* of cloth or other material to be cut. Said mandrel is journaled in bearings in a supporting-frame *c*.

d represents a roll or shaft provided with a series of disk-knives *e*, having continuous circular cutting-edges, said roll being journaled in bearings in the supporting-frame. The shaft *d*, with its knives, is rotated in the direction indicated by the arrow in Figs. 2 and 4 by power applied from a driving-shaft *e'* through a gear *f* on said shaft, meshing with a pinion *g* on the knife-shaft, as shown in Fig. 1, or otherwise.

h represents a grooved pressure-roll, journaled in adjustable boxes *i i*, which are fitted to slide in slots or openings in the supporting-frame, said boxes being here shown as held down by set-screws *j* against springs *k*, which force the boxes upwardly against the screws *j*, so that by adjusting the screws the boxes are adjusted and the roll *h* raised or lowered, as the case may be. The grooved roll is located over the knife-carrying shaft, and has peripheral grooves *h'*, which coincide with and receive the upper portions of the knives, said roll being loose, so that it is rotated only by the movement of the fabric passing between it and the knives.

The fabric is moved in the direction indicated by the arrow in Figs. 2 and 4 by means of feed-rolls *m m' m''*, which are positively rotated by power suitably communicated from the driving-shaft *e'*. The means here shown for communicating motion to the feed-rolls are a pinion *o* on the driving-shaft (shown in dotted lines in Fig. 2) meshing with a gear *p*, affixed to one end of the shaft of the central feed-roll *m'*, a gear *q*, affixed to the opposite end of said feed-roll, and gears *r r'*, meshing with the gear *q* at opposite sides thereof and affixed, respectively, to the lower and upper feed-roll shafts. The web passes over an elevated support *s* before it reaches the grooved roll *h* and knives *e*, and is held by said support in contact with a considerable portion of the periphery of the grooved roll before it is acted on by the knives. Said support is here shown as a table attached to the supporting-frame, the web passing around suitable fixed guide-bars *t t* between the mandrel *a* and said table. Said guides are arranged to exert a considerable degree of friction on the web and thereby resist its forward movement.

The feed-rolls *m m' m''* are arranged at the opposite side of the grooved roll from the support *s*, the relative arrangement of the support *s*, grooved roll *h*, and knives *e* being such that the cloth is spread smoothly upon and held in close contact with a considerable portion of the periphery of the grooved roll before it is cut by the knives. The resistance offered to the movement of the web by the guides *t* and the drawing force exerted by the feed-rolls exert a high degree of tension on the cloth at the point where it is cut, and said tension, together with the extended bearing of the cloth on the periphery of the grooved roll and the support afforded by the portions of the periphery of the grooved roll between the grooves thereof at points close to the knives, hold the cloth so firmly at points where it is acted on by the knives that it cannot yield to the pressure of the knife-edges against it, but is cut smoothly and evenly without ragged edges on the strips into which the material is cut. Another feature of my improved machine, which is of great importance, is the direction of rotation of the knives,

the same being opposite to the motion of the cloth, so that the motion of each knife at the point where it acts on the cloth is outward from the groove which receives the knife instead of inward or toward the bottom of the groove. The knives, therefore, instead of moving through the material into the grooves, as they would do if rotated in the direction of the movement of the cloth, move out from the grooves through the material, so that the lint, &c., detached from the cloth by the cutting operation is not lodged in the grooves, the latter being kept free and unobstructed. It is to be remembered, however, that the outward pressure of the knives on the cloth is prevented from causing the cloth to yield outwardly by the described tension given to the cloth and its extended support on the grooved roll.

The strips into which the web is cut by the knives are wound on an accumulating roll or mandrel *u*, which may be rotated by any suitable means, each strip being thus formed into independent rolls or coils. The knives are steel disks having central apertures and sharpened peripheries, and are placed upon the shaft *d*, and are supported laterally by washers or collars 2. The grooved roll *h* is preferably composed of a shaft 3, having collars or enlargements 4, a metal tube 5, fitted on said collars, and a wooden tube or shell 6, driven onto said metal tubes and having the grooves *h'* cut in its periphery. The metal tube 5 makes the grooved roll stiff and free from liability to spring.

This machine was devised for the purpose of cutting rubber-coated cloth into strips to be made into piping for seams of boots and shoes. I have found by a long series of experiments that said material can be cut more successfully by holding it tightly against a loose grooved roll and subjecting the portion of it which is supported by said roll to the action of the disk-knives, which enter the grooves of the roll and rotate the direction of the movement of the material, than in any other way of which I am aware.

It is obvious that instead of using the guide-bars *t* and table *s* for the purpose of resisting the movement of the web, suitable brake mechanism may be applied to the mandrel *a* for the same purpose.

I claim—

In a machine for cutting sheet material into strips, the combination of a grooved idle-roll, a roll or shaft having a series of disk-knives coinciding with and entering the grooves of the idle-roll, means, substantially as described, for resisting the movement of the material to the knives and grooved roll, a support *s*, arranged as described with relation to the grooved roll and knives, whereby the material is held upon a portion of the periphery of said roll before reaching the knives, feed-rolls arranged at the opposite side of the grooved roll and knives from the support *s*, mechanism for rotating the feed-rolls in the direction required to draw the material from the grooved roll and knives, and mechanism for rotating the knives in a direction opposite to the movement imparted by the feed-rolls to the material, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 5th day of January, A. D. 1889.

JOHN G. McCARTER.

Witnesses:
C. F. BROWN,
W. C. RAMSAY.