

(No Model.)

3 Sheets—Sheet 1.

J. R. HARRINGTON.  
Manufacture of Carpet Lining.  
No. 232,962. Patented Oct. 5, 1880.

Fig. 1

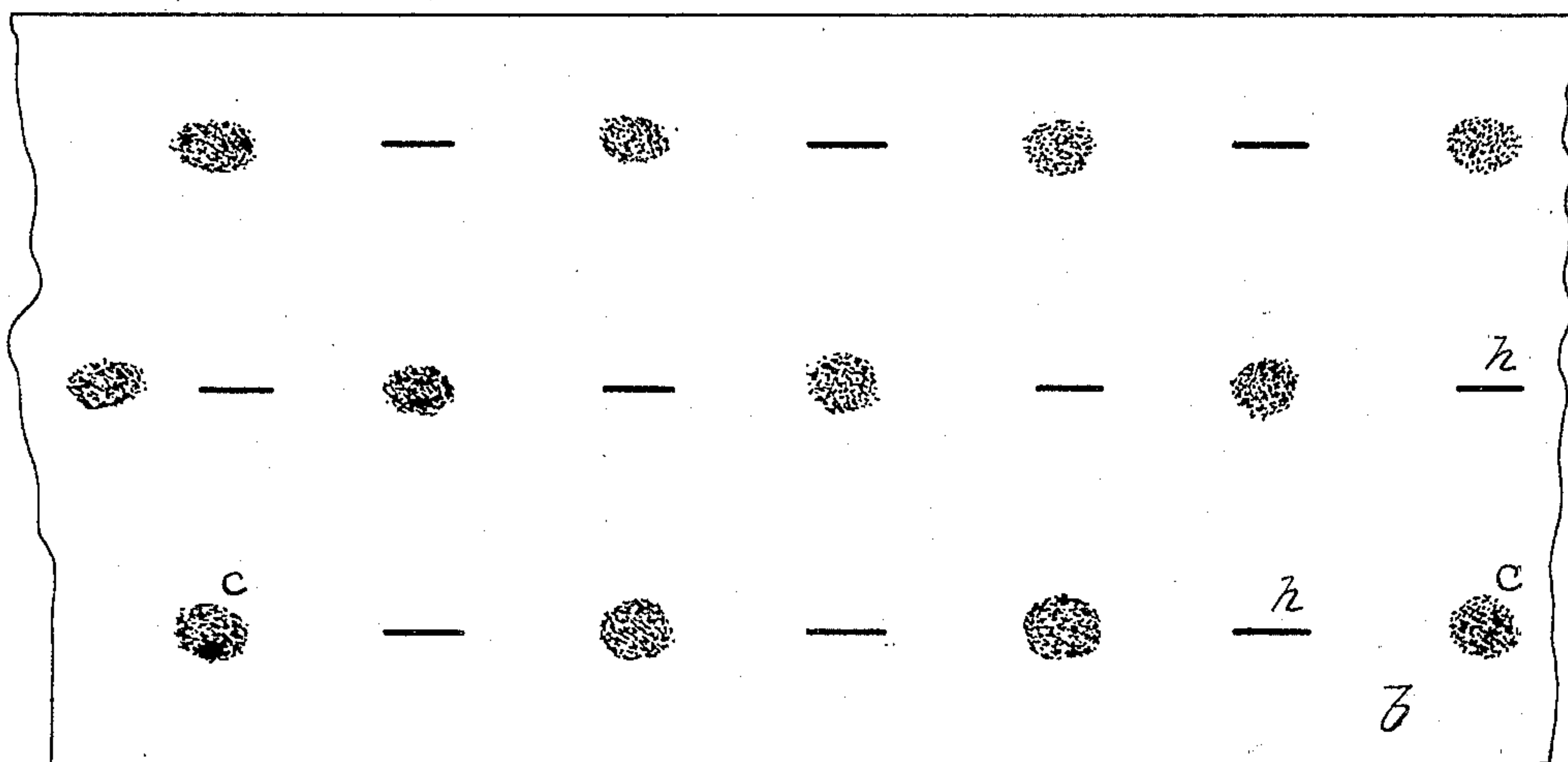


Fig. 2

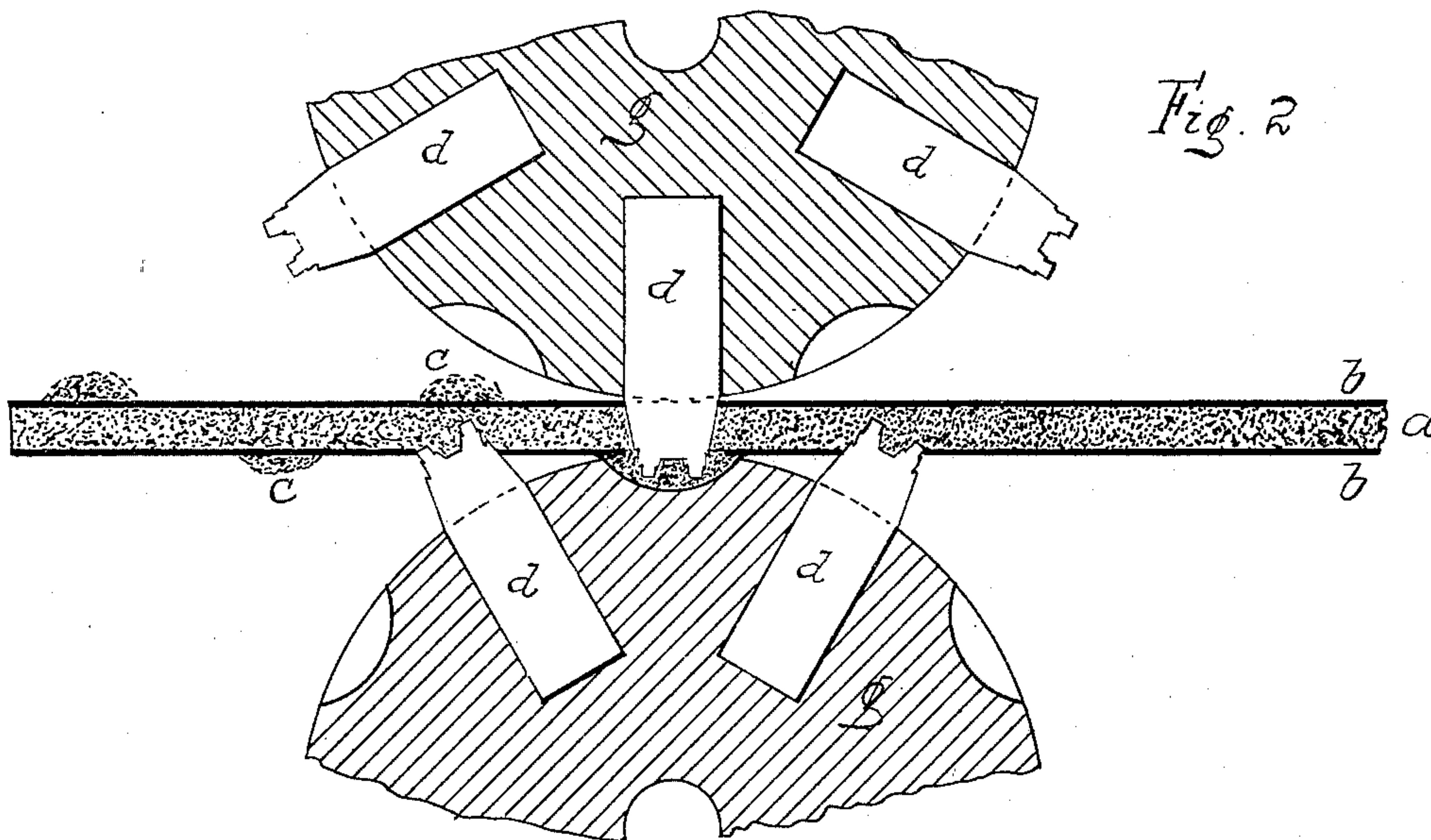


Fig. 3.

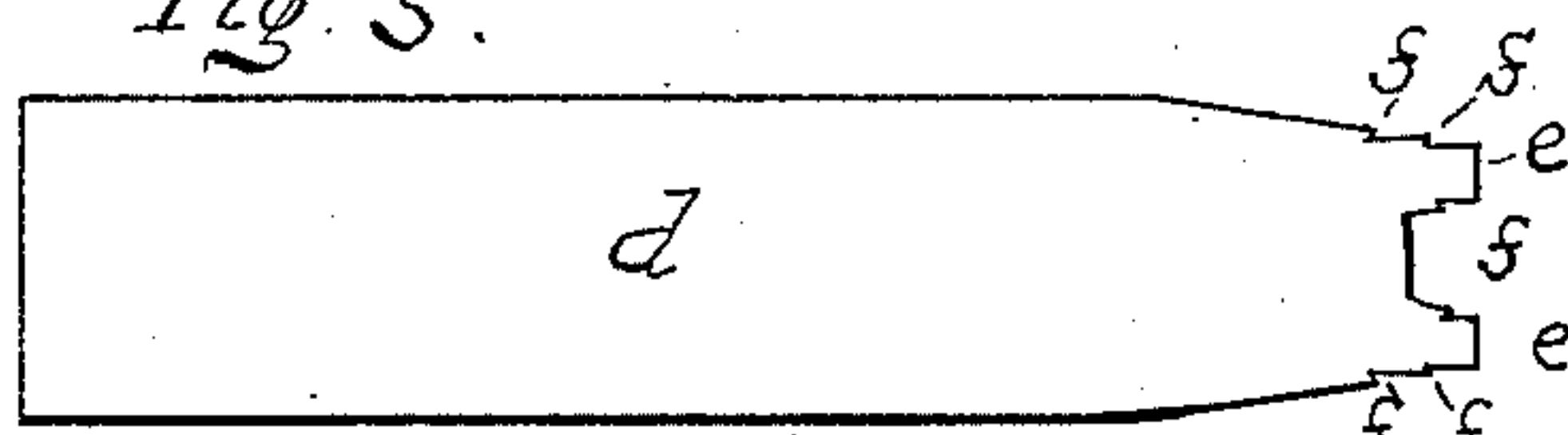
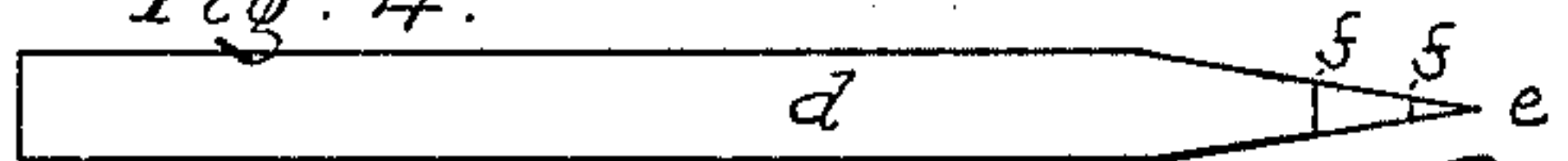


Fig. 4.



Witnesses:

*W. J. Morgan*  
*A. P. Thayer*

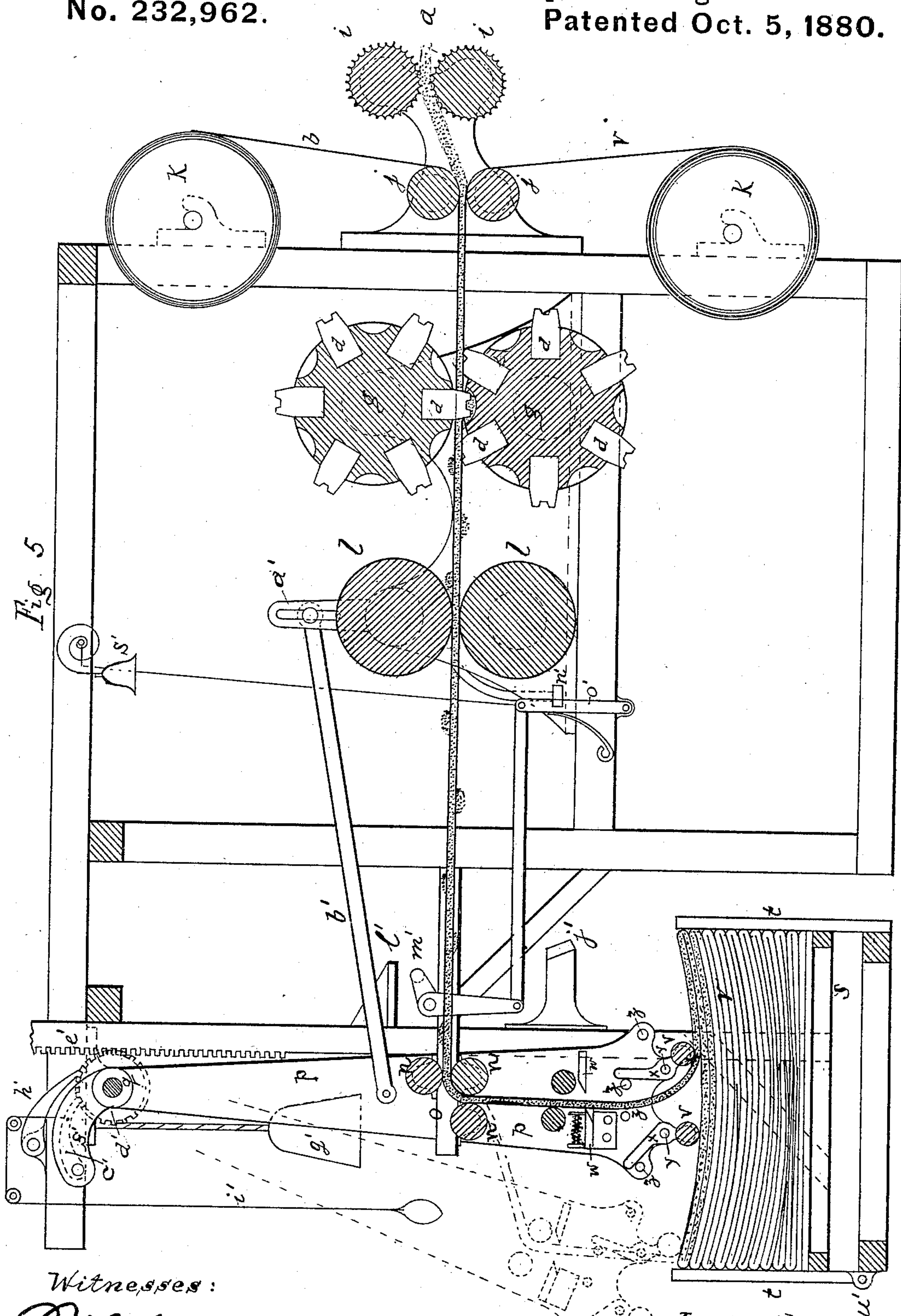
Inventor:

*John R. Harrington*  
*By A. P. Thayer*  
*att'y*

(No Model.)

3 Sheets—Sheet 2.

J. R. HARRINGTON.  
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(No Model.)

3 Sheets—Sheet 3.

J. R. HARRINGTON.

Manufacture of Carpet Lining.

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Fig. 6.

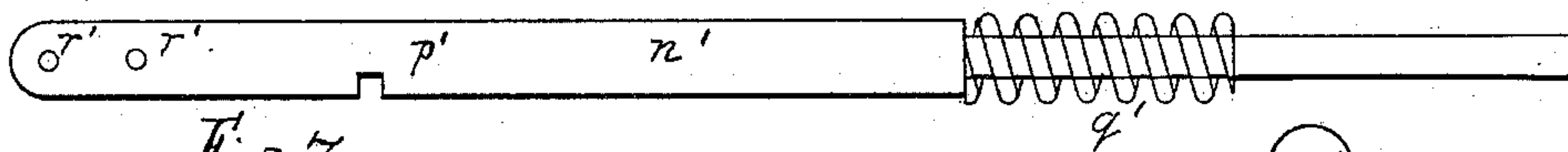
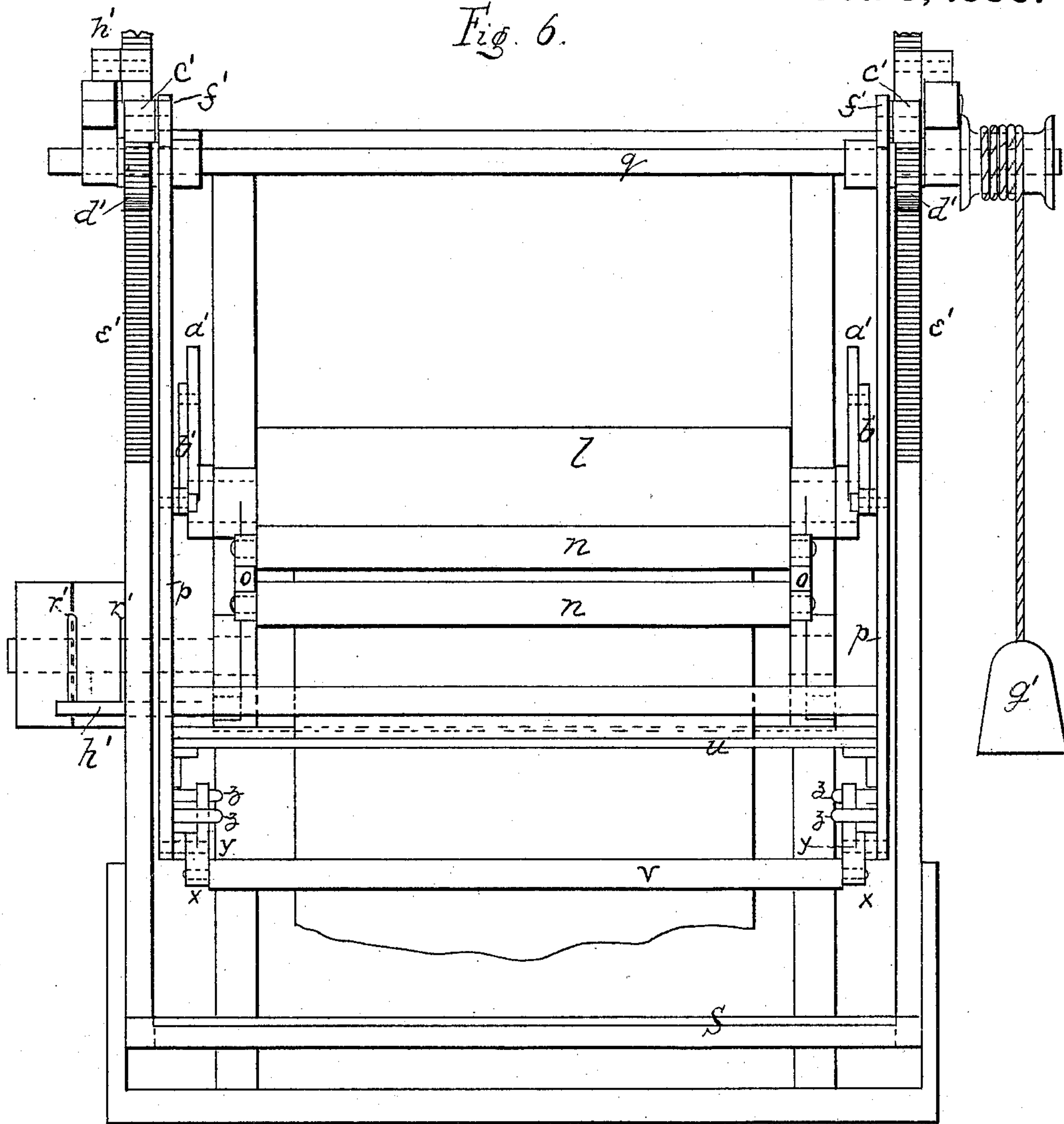


Fig. 7.

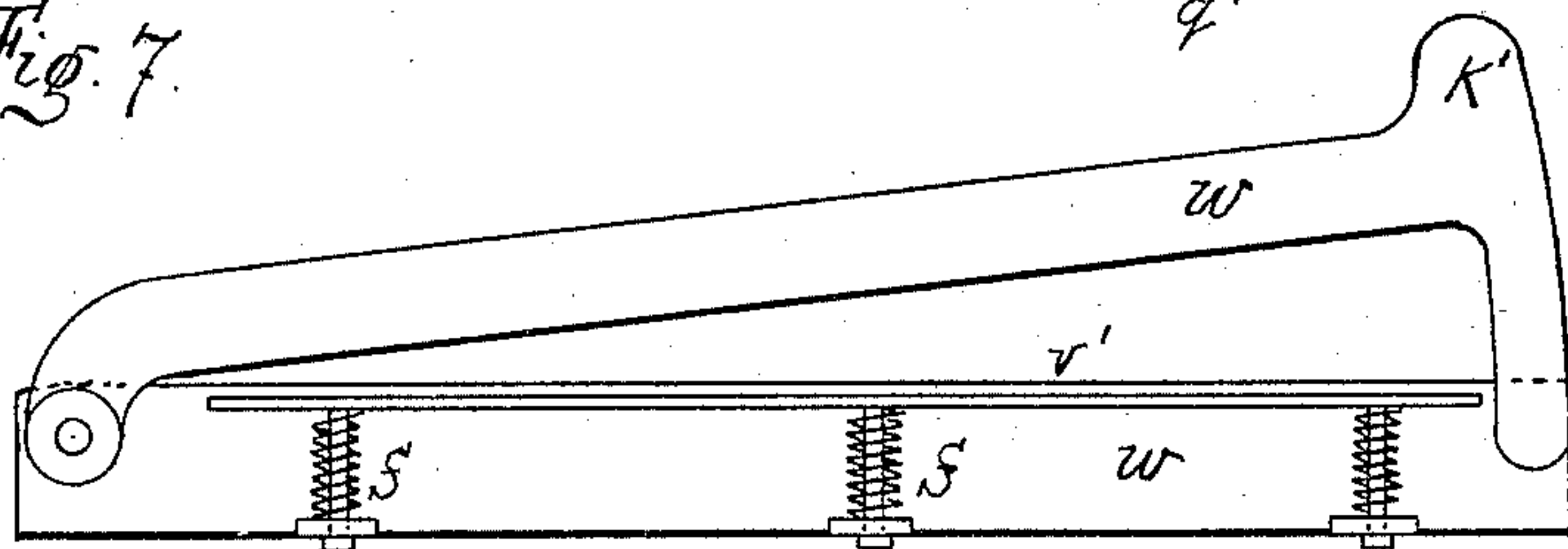


Fig. 8

Witnesses.

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# UNITED STATES PATENT OFFICE.

JOHN R. HARRINGTON, OF BROOKLYN, NEW YORK, ASSIGNOR TO JOHN ALEXANDER HARRINGTON, OF NORTH COLUMBIA, CALIFORNIA.

## MANUFACTURE OF CARPET-LINING.

SPECIFICATION forming part of Letters Patent No. 232,962, dated October 5, 1880.

Application filed July 31, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. HARRINGTON, of Brooklyn, Kings county, and State of New York, have invented a new and useful Improvement in Manufacture of Carpet-Lining, of which the following is a specification.

The improvement in the carpet-lining consists of the method of fastening the sliver or web of cotton or other fibrous material composing the elastic middle layer and the paper sheets inclosing the same together by punching through the fabric from side to side with punches armed with barbs, points, prongs, or crotches, so as to carry portions of the fibrous material along through the paper and form tufts, knots, or bunches upon the exterior surface of the same of sufficient capacity to hold the fabric together, especially when said tufts are flattened or matted against the paper, by means of pressure applied after the tufts are projected through the paper. Both sheets of paper are secured alike by punching through from both sides, preferably in alternate order.

Carpet-lining consisting of a bat or sliver between two paper sheets is very largely used, the different layers being fastened together by paste or by sewing. Some other methods have been tried, but only these two have been much used. The paste is objectionable because of the expensive mechanism required for applying it, also because of the expensive apparatus and slow process for drying the paste, and also because the paste produces or attracts insects; and sewing is too complicated and expensive.

By my new method the work is quickly and cheaply done by passing the fabric between two rollers armed with punches, or it may be two gangs of reciprocating punches, and when done there is no objectionable feature about the fabric whatever.

The improvement in the apparatus for carrying out the method of fastening consists of barbed punches contrived to perforate the paper and at the same time push tufts or bunches of the fibrous material through the perforations and leave them projecting when they withdraw, together with devices for working said punches and feeding the fabric

to and from them, which devices are combined with the means employed for arranging the paper sheets and fibrous fabric together, preparatory to so fastening them and in succession to the fastening devices.

I have contrived automatic measuring, folding, cutting-off, signal, and stop devices for arranging the fabric in piles of predetermined length, preparatory for baling, all as hereinafter more particularly described, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of the improved carpet-lining of my manufacture. Fig. 2 is a section of the same taken longitudinally of Fig. 1, also a section of a pair of rolls armed with barbed punches, such as I employ to effect the fastening of the sheets or layers of the fabric together. Figs. 3 and 4 are side elevations of a punch. Fig. 5 is a longitudinal sectional elevation of the machine for fastening the paper and sliver or bat together and the automatic folding, measuring, cutting, and stopping mechanism. Fig. 6 is an end elevation of Fig. 5. Fig. 7 is a side elevation of the belt-shifter of the stop mechanism, and Fig. 8 is a plan view of the shears for cutting off the fabric.

The fabric consists of the usual middle layer or sheet of fibrous material, picked, combed, and carded into a sliver, *a*, and laid by means of suitable rollers between two sheets of paper, *b*.

*c* represents the tufts, bunches, or knots of fiber, pushed or punched out through the paper sheets at intervals along and across the fabric and on both sides of the same, to fasten the whole together by the spreading, swelling, or expanding of the knots or tufts outside of the paper.

*d* represents the punches employed for perforating the paper and causing the knots or tufts to protrude. They are made sharp at the points *e* to perforate the paper, but not so as to cut the fiber of the sheet *a*, and they are forked or bifurcated and provided with barbs *f*, in any suitable arrangement, to push the tufts through the paper; but plain punches without barbs may be used.



I have represented these punches as arranged in a pair of rollers, *g*, to be worked for punching the fabric which is made to pass between them as they revolve, the two rollers having equal numbers of punches, and each having sockets or recesses for the punches of the other, so that the punches can pass entirely through the fabric, as shown in Fig. 2. On the side of the fabric entered by the punches only slits *h* are made, the tufts coming out the other side. Consequently both rollers are armed with punches, and they are arranged to work alternately.

The punches may, of course, be in reciprocating stocks, if desired, instead of rollers, the fabric being made to stop while the punches work, or the punch-stocks made to travel in unison with the fabric while engaged with it. The roller-stocks or carriers for the punches are, however, considered the best, for they are simpler, and it is believed may run faster than the others could well be made to work. It will be seen at once that this method of fastening can be worked very much faster than sewing, and as to the pasting method, the slow rate necessary for drying the paste, besides the cost of furnishing the heat, clearly establishes my new method as most economical, while by avoiding the use of paste the fabric is more cleanly and healthful than when pasted, and it is more elastic, for these tufts add to the elasticity, while the paste and stitches bind the fabric together.

When the fabric is sewed several sewing-machines are required, one for each row of stitches; and when it is pasted a considerable complication of mechanism is required for applying the paste, while the drying apparatus must be elaborate and extensive to enable the work to be done rapidly.

The mechanism required for my method is very simple, and may be run very much faster than either of the other kinds at their best.

For my purposes the bat or sliver *a* is made to pass from the pair of fluted delivery-rollers *i* of the picking, combing, or carding machine between a pair of guide-rollers, *j*, where it is run between the paper sheets *b* coming from the reels *k*. From these guide-rollers the fabric goes between the punch-rollers *g* to be fastened, thence through a pair of presser-rollers, *l*, which are employed to mat or flatten the tufts *c*, and from these rollers it passes to the folding apparatus through the guide-rollers *n*, which are mounted upon suitable stationary supports *o* inside of the swinging frame and below the axis *q* of the same. Here the fabric is turned downward to fold in the pile *r* upon the gradually-descending follower *s* between the stationary side walls, *t*. It passes between the shears *w* and the laying-rollers *v*, both carried on the swinging frame *p*. These rollers are mounted on the tilting arms *x*, which swing on pivots *y* between stops *z*, so that the roller in advance of the fabric will press the pile down, and the one behind will

rise a little and roll more lightly upon the fabric it is laying, by which the folds will be made better than if both rollers were at the same height. They shift or tilt by the friction against the pile when the motion of the swinging frame changes. This frame is operated by a crank, *a'*, of one of the pressure-rollers *l*, and a connecting-rod, *b'*. It may be arranged to carry rollers *v* in a horizontal plane, if preferred.

The rollers *n* may be driven by a belt from one of the rollers *l*, or in any other approved way.

The swing of the frame *p* is adjusted to lay the folds in half-yard lengths, and the follower is made to descend as much at each double swing of the frame as is needed for the layers, the same being effected by the pawls *c'*, pinions *d'*, and the toothed bars *e'*, by which the follower is suspended, said pinions being keyed on the axial shaft *q*, on which the frame *p* swings, and the pawls *c'* being on arms *f'* of said frame, which swing so as to work the pinion.

A counter-weight, *g'*, holds the follower upward, and the holding-pawls *h'* restrain the counter-weight until the pawls are lifted by the cord *i'*, which, when pulled, lifts pawls *c'* against *h'*, when the follower is to be raised after a bundle or pile for a bale has been discharged. The weight *g'* then raises the follower. When the predetermined number of yards has been laid on the follower the bracket *j'* on one of the supporting-bars *e'* of the follower has descended to such a point that the head *k'* of the movable jaw of the shears strikes it in the backward swing of the frame *p*, arresting the blade and closing it on the other and cutting off the fabric. At the same time the bracket *l'* on the same bar *e'* touches lever *m'*, and trips the belt-shifter *n'* by pulling trip-bar *o'* out of its notch *p'*, allowing spring *q'* to throw said shifter, so that its fork *r'* shifts the belt over onto the loose pulley and stops the machine to allow of the removal of the pile and readjustment of the follower for another. The bell *s'* is at the same time made to sound a warning to the attendant by being connected with cord *t'* to the belt-shifter for the purpose. When the fabric has been thus cut and the machine stopped the attendant swings down one of the walls *t*, which is hinged as at *u'*, removes the pile, pulls cord *i'*, and thereby readjusts the follower for receiving another pile, and then sets the machine in motion again by pushing back the belt-shifter and setting it.

The stationary shear-blade is provided with a discharger, *v'*, with springs *x'*, that pushes off the cut fabric and prevents it from lodging on the blade.

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

1. The method of fastening the paper and inclosed bat or fibrous fabric of carpet-lining



by punching tufts, knots, or bunches of the bat through the paper, so as to form heads or bunches outside of the paper, substantially as described.

5 2. The new manufacture of carpet-lining, consisting of paper sheets and an inclosed bat of fibrous material fastened together by means of tufts, knots, or bunches of the fibrous material punched through the paper, substan-  
10 tially as described.

3. The improved punch for fastening carpet-lining, having bifurcated and barbed points, substantially as described.

15 4. The combination, in a machine for fastening layers of carpet-lining, of a pair of rollers, *g*, armed with barbed and bifurcated punches *d*, substantially as described.

20 5. The combination of guide-rollers *j*, paper-reels *k*, and punch-rollers *g*, substantially as described.

6. The combination of rollers *g*, armed with barbed and bifurcated punches *d*, and a pair of presser-rollers, *l*, substantially as described.

25 7. The swinging frame *p*, with guide-rollers *n* and laying-rollers *v*, and the descending follower *s*, with walls *t*, combined with a ma-

chine for making carpet-lining, substantially as described.

8. The combination, with the swinging frame *p* and the descending follower *s*, of the 30 shears *w*, mounted on said frame, and the stop-bracket *j'*, mounted on the follower-support, substantially as described.

9. The combination of tilting laying-rollers *v* with the swinging frame *p* and the descend- 35 ing follower *s*, substantially as described.

10. The combination of swinging frame *p*, descending follower *s*, toothed suspending-bars *e'*, pinions *d'*, pawls *f'* and *h'*, and the counter-weight *g'*, substantially as described. 40

11. The combination of swinging frame *p*, descending follower *s*, bracket *l'*, bell-crank *m'*, belt-shifter *n'*, and trip-lever *o'*, substan-  
tially as described.

12. The combination of discharger *v'* with 45 the shears *u*, substantially as described.

JOHN R. <sup>his</sup> × HARRINGTON.  
mark.

Witnesses:

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