3 Sheets--Sheet 1.

B. F. STURTEVANT.

Apparatus for Preparing Sole-Fastening Material.

No. 162,969. Patented May 4, 1875.

Fig. 4.

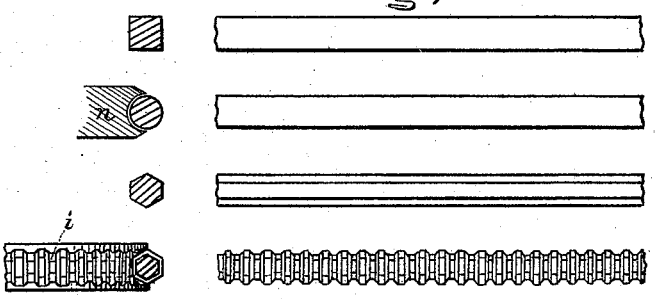
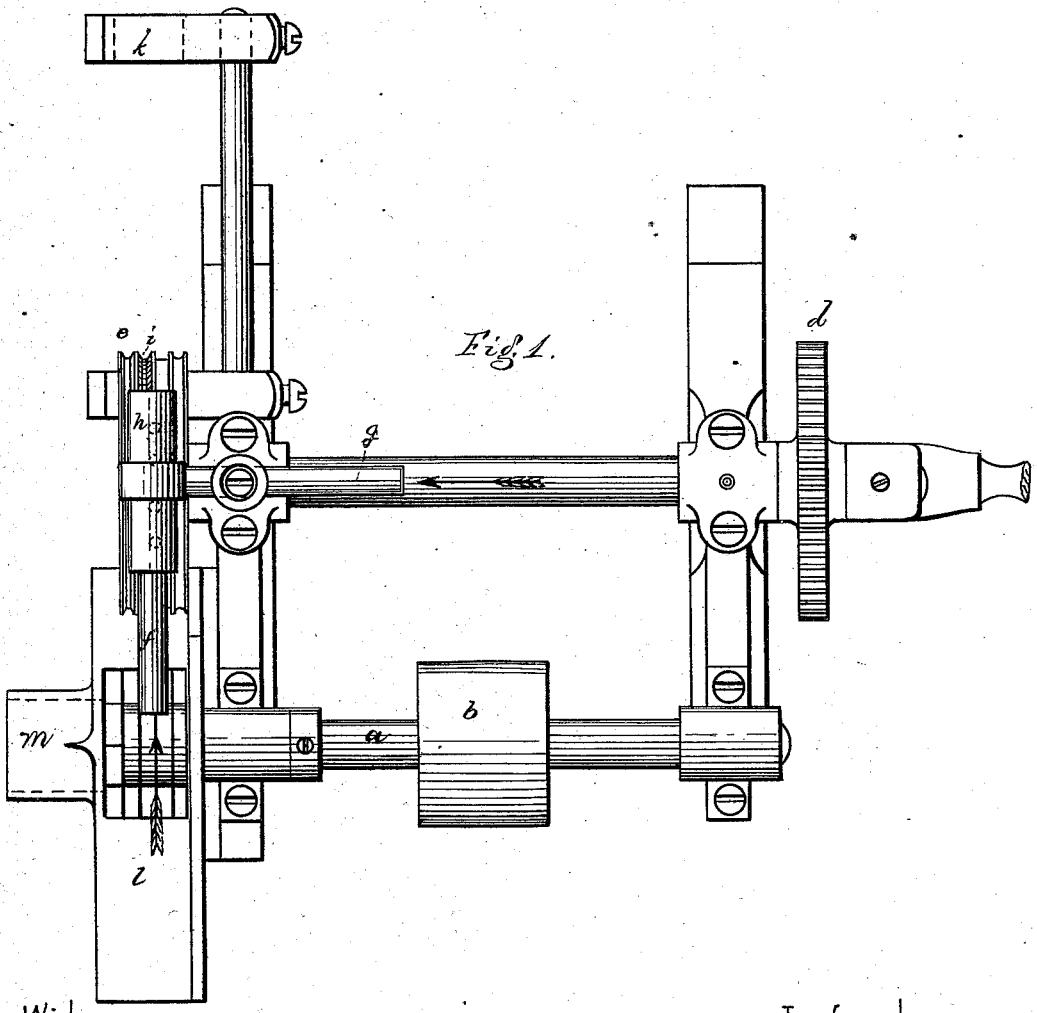


Fig. 1.



Witnesses.

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per Cross by Gregory Attys

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B. F. STURTEVANT.

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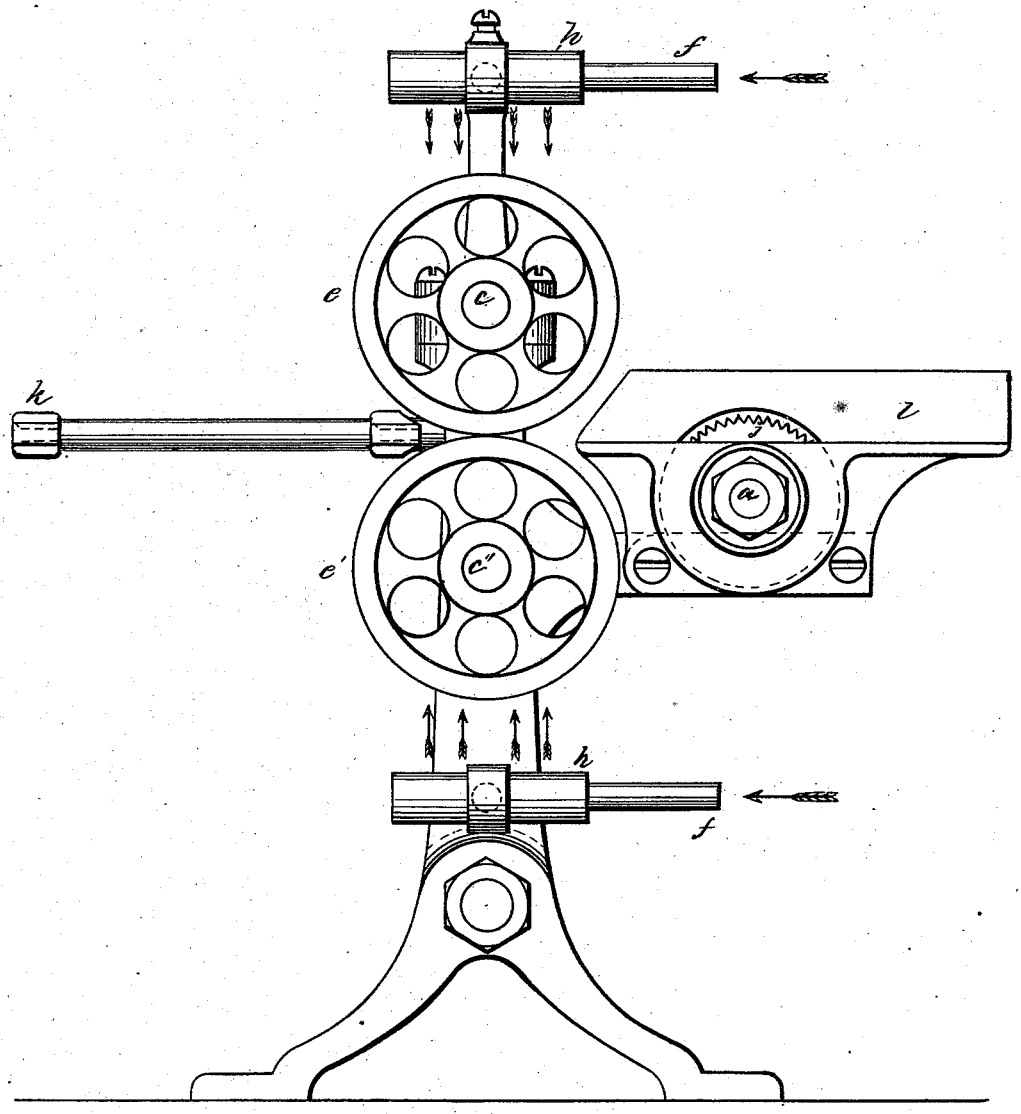
Fig. 2.



Witnesses.
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Wm. Pratt.

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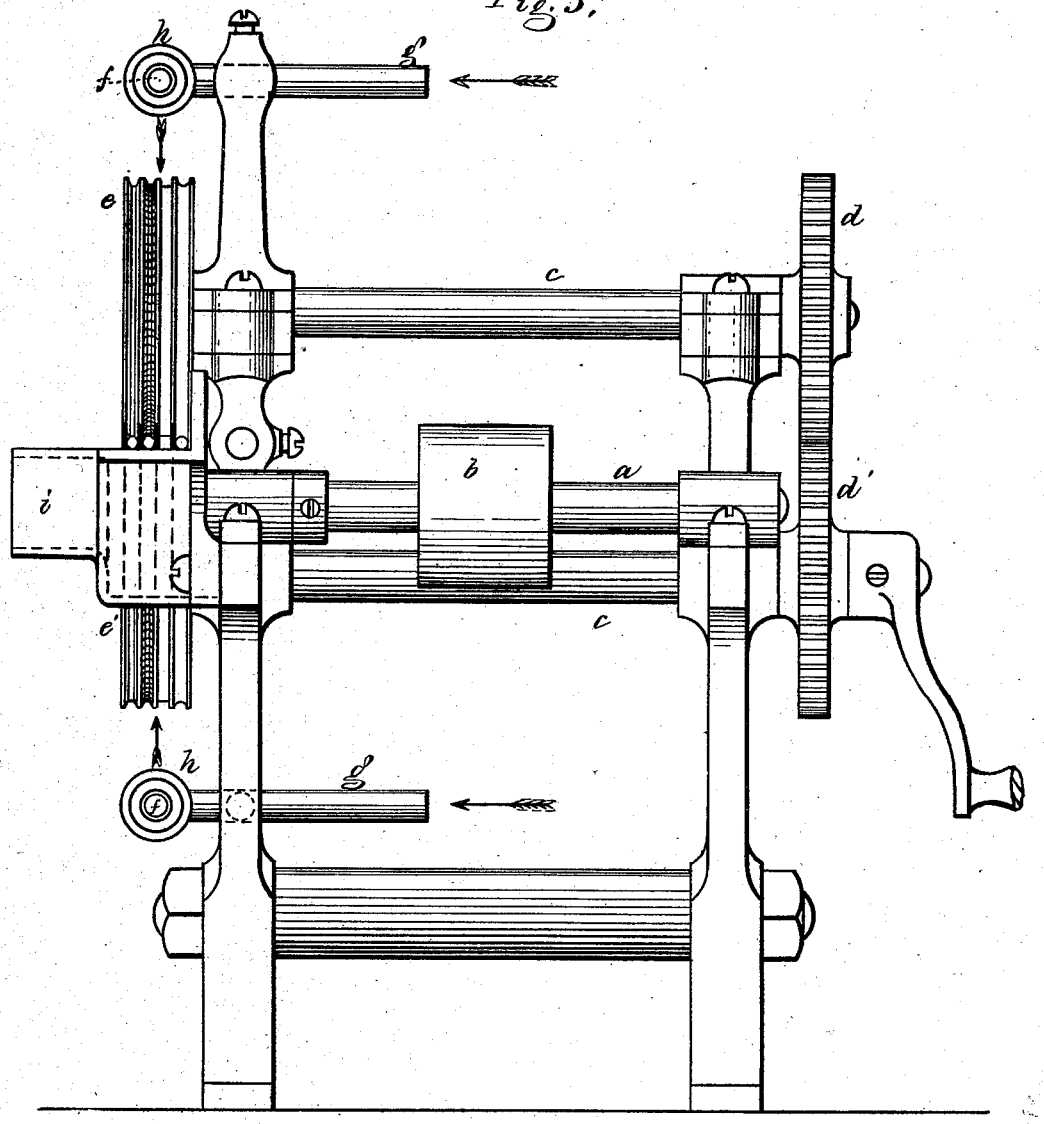
3 Sheets--Sheet 3.

B. F. STURTEVANT.

Apparatus for Preparing Sole-Fastening Material.

No. 162,969. Patented May 4, 1875.

Fig. 3.



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Inventor.
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PER Cosby & Gregory Atty's.

UNITED STATES PATENT OFFICE.

BENJAMIN F. STURTEVANT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN APPARATUS FOR PREPARING SOLE-FASTENING MATERIAL.

Specification forming part of Letters Patent No. **162,969**, dated May 4, 1875; application filed March 17, 1875.

To all whom it may concern:

Be it known that I, BENJAMIN F. STURTEVANT, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Apparatus for Preparing Sole-Fastening Material, of which the following is a specification:

This invention relates to mechanism designed for forming and condensing such compressible material as is from its nature capable of being made into long string-like or wire-like lengths, and given by compression rigidity sufficient to adapt it for driving into holes previously made for its reception, my intent being to use such material after it has been operated upon by said mechanism as the weft or woof of strips of sole-fastenings described in other applications for United States Patents heretofore made by me; or I may use it in the manner in which wire is now used in machines for nailing boot and shoe soles.

In the drawing, Figure 1 shows said mechanism in plan, and Figs. 2 and 3 in side and end elevations. Fig. 4 shows details of products of this mechanism.

In suitable bearings on a frame are located three shafts, the shaft *a* being provided with a belt-pulley, *b*, and a gang of overhung circular saws adapted to divide a strip of ligneous material into several narrower strips or rods before passing to the shaping and condensing rolls, which are mounted on the ends of shafts *c c'*, there being fixed on the other ends of said shafts equal gears *d d'*, meshing into each other, rotation being given to said shafts in any suitable known way. Around the peripheries of the shaping and condensing rolls *e e'* grooves are formed of any desired shape of cross-section, and of size suited to give the proper degree of compression to the material fed through the grooves by the rotation of the rolls; and, if desired, the surfaces of the grooves may be indented, as at *i*, to give corresponding indentations to the material undergoing compression. As in most cases the compressing of the material is made more lasting by having the compressors hot when in action, devices for burning commingled air and gas are shown above the upper roll *e* and below the lower roll *e'*, said devices consisting of an air-conveying pipe, *f*, and a gas-conveying pipe, *g*, which discharge these currents into a common chamber, *h*, pierced with small holes, from which ignited jets are directed toward the rolls *e e'*, burning with a colorless, smokeless flame, the intensity of which can be regulated to any required degree. For heating the condensing-rolls it is evident they might be made hollow, and steam could be passed through the spaces therein. In taking material from the saws or cutters *j* the rolls move in a direction the reverse of that which is given them when operating on strings of fibrous material presented through the guide *k*, which guide, with its carrier, may be removed when the rolls are receiving and operating on material direct from the saws or from that direction; or, when the saws are used, the guide *k* will be useful in guiding and sustaining the condensed product when passing from the rolls. The set of grooves may vary uniformly in size from the largest to the smallest, and as many passes on the material may be taken as there are grooves in the rolls. In such case, if of ligneous material, the rods or wire-like sticks would be returned after passing one groove for passage through the next; but when the condensing operation is to be performed on fibrous material like cord or thread, it may, by passing over leaders and guides, be made to receive the action of all the grooves in succession. The saws, which are preferably mounted on an overhung end of the saw-shaft or spindle *a*, are incased and run in a box-like cavity, *l*, one side of which is open and the other formed into a neck, *m*, suited for attachment to the suction-pipe of an exhaust-fan for the removal of the saw-dust formed by the action of the saws.

In Fig. 4 is shown, on an enlarged scale, some of the sole-fastening material, various forms of which may be produced or finished by the action of the rolls. Where one pass of the condensing-rolls is sufficient to compact and rigidify the sole-fastening material subjected to their action, as will most commonly be the case, then the number of strips acted on at the same time will be limited only by the capacity of the machine. For some kinds of material the edges of the flanges forming the grooves in the condensing-rolls may be sharpened, as shown at *n* in Fig. 4,

so as to constitute cutters to sever a strip into narrow rods or strips, as and when they are condensed, in which case the saws would be dispensed with.

I claim—

1. The combination of the series of circular toothed cutters with the annularly-grooved condensing-rollers, adapted to operate upon the material passing from the cutters, substantially as described.

2. The combination, with the annularly-grooved condensing-rollers, adapted to operate substantially as described, of the heating apparatus, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJ. F. STURTEVANT.

Witnesses:

G. W. GREGORY,

S. B. KIDDER.