P. Barnum.
Burning Bats.

Patented Oct. 17. 1854.

No. 11,805.

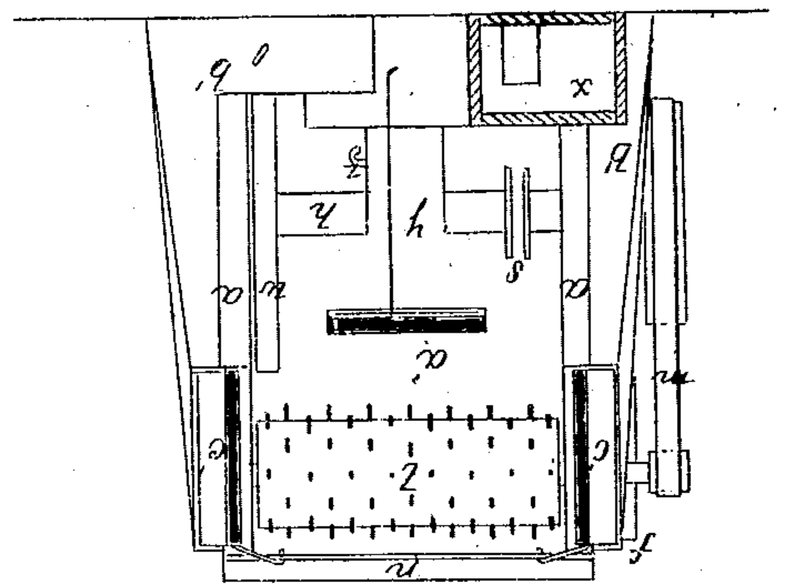

Fig: 4.

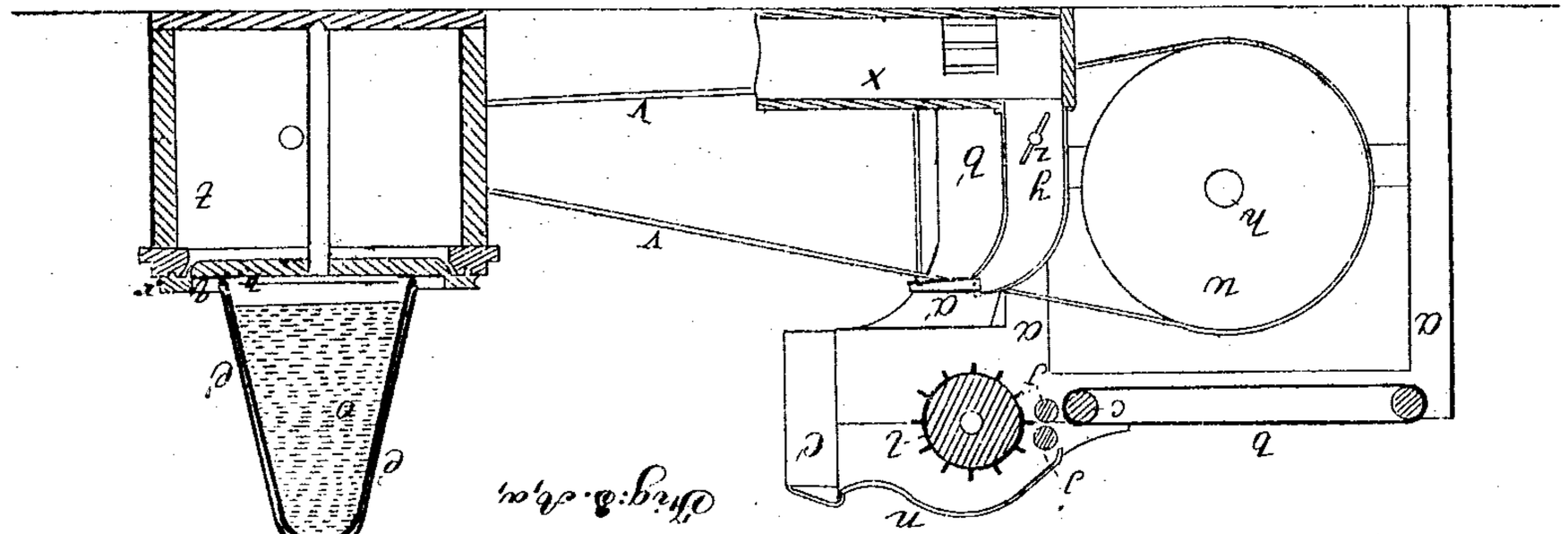

Fig: 3.

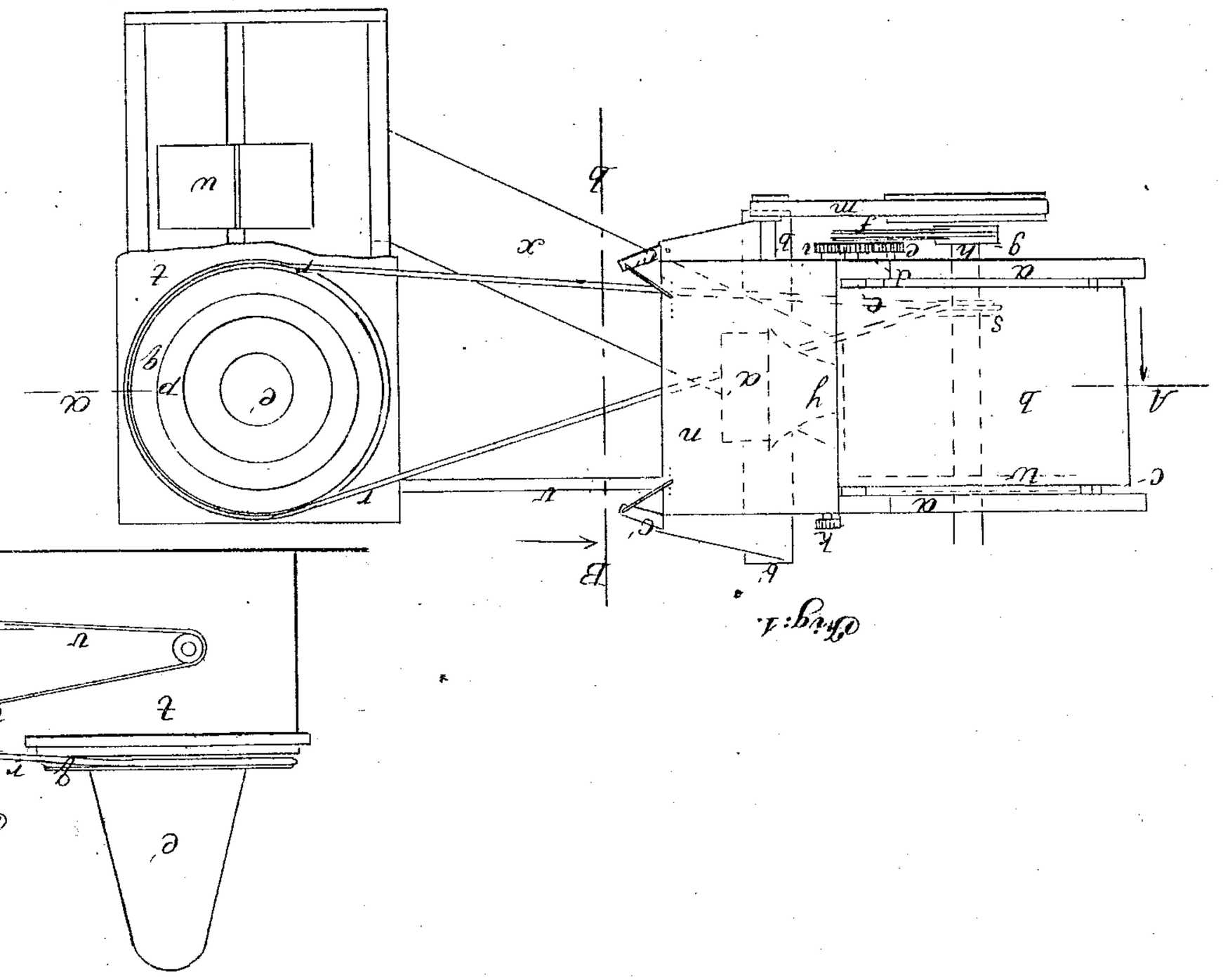

Fig: 1.

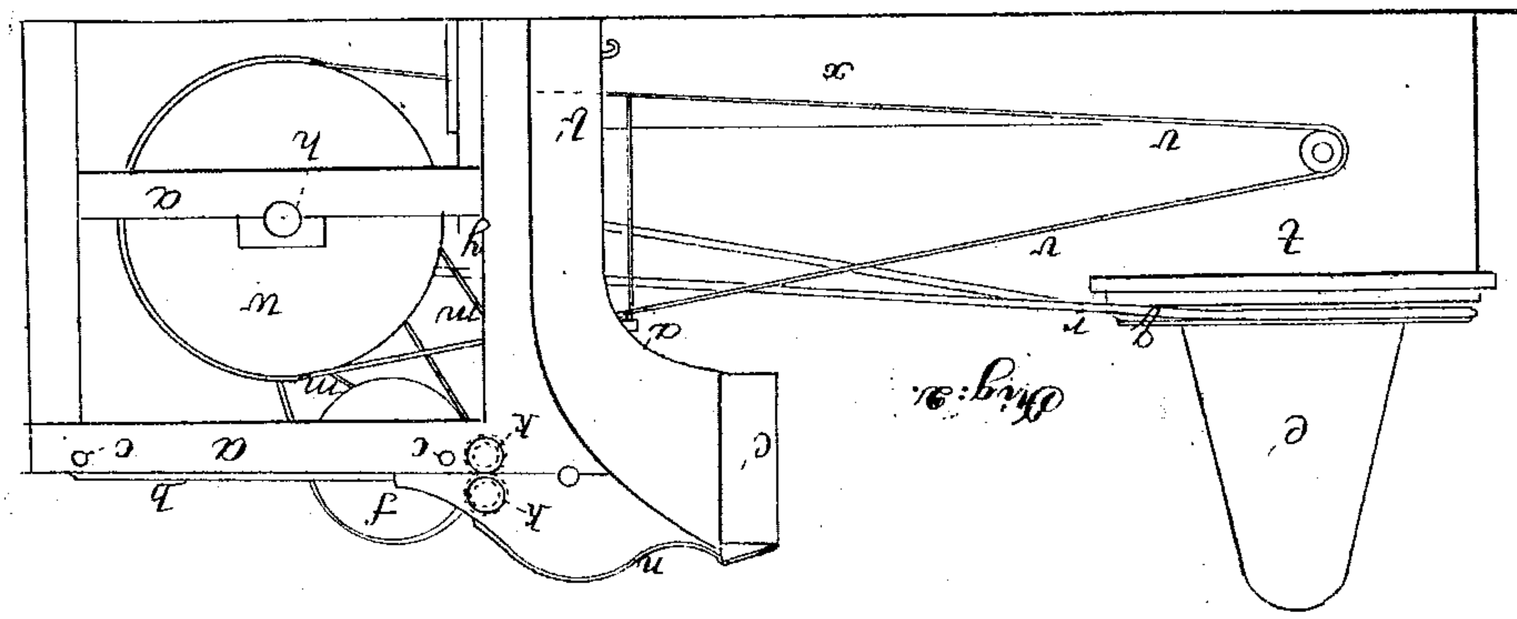

Fig: 2.

UNITED STATES PATENT OFFICE.

DANIEL BARNUM, OF NEW YORK, N. Y.

MACHINERY FOR FORMING HAT-BODIES.

Specification of Letters Patent No. 11,805, dated October 17, 1854.

To all whom it may concern:

Be it known that I, DANIEL BARNUM, of New York City, New York, have invented certain new and useful Improvements in the Machine for Forming Hat-Bodies on a Perforated Cone and in the Mode of Taking them Off when Formed; of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a plan of the improved machine; Fig. 2, a side elevation; and Figs. 3 and 4, vertical section at the lines A, *a*, and B, *b*, of Fig. 1.

The same letters indicate like parts in all the figures.

In the machine for forming hat bodies for which Letters Patent of the United States were granted to Henry A. Wells bearing date the 25th day of April, 1846, the fur is taken by a rotating fan or picker and thrown through a trunk onto a perforated metallic former placed in front of the delivery aperture of the said trunk which guides the fibers, and regulates and distributes the deposit of fur as required. And after the required quantity of fur has been deposited it is surrounded by a moist cloth, another perforated metallic cone slipped over it, and the whole immersed in hot water to harden the bat of fur sufficiently to admit of removing it from the cone on which it was formed.

The object of my invention is to dispense with the trunk for guiding the fur onto the perforated cone in forming the hat body, and in the use of water to harden the bat before removing it from the metallic cone.

The first part of my invention consists in directing and guiding the fibers of fur as they are thrown by the rotating brush or picker, and properly distribute them onto the exhausted perforated cone or former, by means of currents of air discharged from narrow apertures or spouts, one at each side and one at bottom, so located and adjusted as to insure the deposit of fur on the cone as required. And the second part of my invention which relates to the method of taking off the bat from the metallic cone, consists, first, in covering the metallic cone with a cone made of grass cloth, or other like pliable material which is pervious to air, on which the fur is deposited, so that the bat can be taken off with the glass cloth inside to be used as an inlayer in the after process of hardening. And this part of my invention also consists in the employment of a cap of vulcanized india rubber to be slipped onto the bat, to hold the fibers together when removed from the perforated metallic cone, and during the process of hardening, as I have discovered that india rubber possesses the property, in a high degree, of felting the fibers of fur, or rather of causing the fibers to unite and interlock.

In the accompanying drawings *a* represents a suitable frame and *b* an endless apron on which the fur is properly distributed by an attendant. This apron passes around two rollers *c*, *c*, in the usual manner of feed aprons, one of which rollers has a pinion *d*, on one end that engages another pinion *e*, on a band wheel *f*, that receives motion by a band from a pulley *g*, on the driving shaft *h*. The pinion *d*, in turn engages another pinion *i*, on the end of one of a pair of feed rollers *j*, *j*, geared together at the other end by means of pinions *k*, *k*. These rollers take the fur from the feed apron and present it to the action of a rotating brush or picker *l*, that receives motion from the driving shaft by a band *m*. The picker is covered by a cap or casing *n*, and as it rotates with a high velocity it picks the fibers of fur from the feed rollers and throws them toward the perforated former *o*. This former I prefer to make of perforated sheet copper strengthened by a rim at the lower edge. It is placed on a ring *p*, resting on the arms of a horizontal wheel *q*, the periphery of which is grooved to receive a band *r*, from a small pulley *s*, on the driving shaft, by which it is rotated with a slow motion. This wheel is placed over a hole in the top of a box *t*, in which is placed an exhausting fan *u*, the shaft of which passes through the box at one end, and there carries a pulley to receive a belt *v*, from a large pulley *w*, on the driving shaft, to give the fan a sufficient velocity to induce a current of air inward through the perforations in the cone or former, by means of which currents of air, the fur, deposited on the cone as it rotates slowly, is held until the required thickness has been accumulated.

At the side of the box *t*, and in a situation tangential to the periphery of the fan, is a trunk or pipe *x*, into which a current of wind is forced by the fan. At the opposite end, this trunk or pipe *x*, has a vertical branch *y*, provided with a damper *z*, to gov-

ern the passage. This branch extends up to within a short distance of the bottom of the rotating picker. It is gradually spread in width, and flattened and curved forward. And to the aperture is fitted, by a hinge joint, a spout a', the position of which can be adjusted at pleasure to elevate or depress the mouth, which is long and narrow, to elevate or depress the blast which is thus discharged in a thin sheet, and which, striking the fur as it is thrown by the picker, keeps it up, and directs it vertically onto the cone or former. Two similar pipes b', b', branch off laterally and then turn up vertically and then curve forward to form two long and narrow apertures one on each side of the casing of the picker. And each of these is provided with a hinged spout c', in manner similar to the spout a', except that they are vertical or nearly so. From these two spouts are delivered two streams or sheets of air which carry along and guide the fur laterally to the cone or former and prevent any fur from flying off laterally to waste. As the spouts are hinged they can be turned and set at any desired angle to direct and insure the proper deposit of fur onto the cone or former.

It will be obvious from the foregoing that if the air drawn by the fan through the cone or former be not sufficient to produce the required blast in the three directing spouts, that the fan can be further supplied with air through an aperture, or apertures, in the box; that the pipes and spouts, for directing or guiding the currents of air, may be greatly varied as to form, construction and position, so long as the apertures are long and narrow, and one is applied at the bottom and the other two on opposite sides. And it will also be obvious that the spouts may be fixed instead of being hinged, provided they are placed at the required angle, but I prefer to make them hinged as affording means for adjustment to suit varying circumstances. If desired, the hinged spouts may be moved during the operation of the machine to direct and vary the distribution of the fibers on the cone or former, as more or less fur may be required on any part.

To the metallic cone or former is fitted a cap d' made of grass cloth or other flexible substance which is pervious to air; but I prefer grass cloth on account of the absence of small projecting fibers such as are found on woolen and cotton cloths, to which the fur in the after process of hardening would become attached. And before blowing the fur onto the cone or former, it is to be covered with this cloth cap, and the fur deposited thereon. So soon as the required quantity of fur has been deposited, and while the pressure of air is maintained by the exhausting fan, another cap e', made of vulcanized india rubber cloth, with the india rubber surface inward, is put over the bat of fur, and then the bat, thus held between the grass cloth form and the india rubber cloth, is removed from the metallic former, and folded up, and properly rubbed to cause the fibers to interlock and thus "harden," as it is technically termed, the grass cloth during this operation answering the purpose of an "inlayer" as it is termed by hatters, to prevent the fibers on the inner surface from uniting.

India rubber cloth, I have discovered, possesses the required qualities necessary to hold the fibers of the bat together, and, when motion is applied, of permitting the fibers to move freely in the act of felting. The surface of the india rubber being very smooth will permit the fibers to slide freely, and from its peculiar structure and elasticity, the slightest motion given by the hand will be transmitted to the fibers to cause them to interlace or felt. After the bat has been hardened, the india rubber cap and the grass cloth inlayer can be removed, and the bat is then in a condition to be carried through the after processes.

I do not wish to be understood as limiting myself to the use of vulcanized india rubber for the outer cap, as native india rubber and gutta percha will answer the purposes, but not so well as vulcanized india rubber.

What I claim as my invention and desire to secure by Letters Patent, is—

1. In combination with the picker or brush and perforated cone or former, the employment of currents of air at the bottom and sides, substantially as herein described, to guide and direct the deposit of fur onto the cone or former, as described.

2. I also claim the employment of a form made of grass cloth or other flexible material pervious to air, on which to deposit the fibers in forming the bat, and to be taken from the perforated metallic cone or former with the bat, and retained inside as an "inlayer" during the after process of hardening as set forth.

3. And finally I claim the employment of an india rubber cap to be put onto the bat of fur to hold the fibers together in taking off the bat from the perforated cone or former, and to facilitate the hardening of the bat in the dry state, substantially as specified.

DANIEL BARNUM.

Witnesses:

ALEX. PORTER BROWNE,

JOHN DONLEVY.