(No Model.)

A. HACKETT.

MACHINE FOR MOLDING SPOOLS OR BOBBINS.

No. 432,037. Patented July 15, 1890.

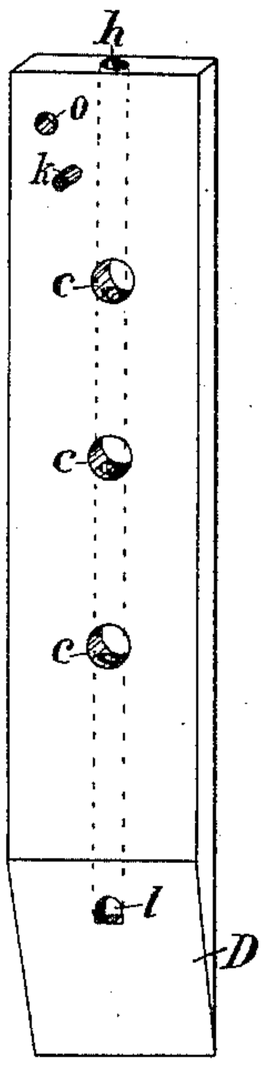

Fig: 5

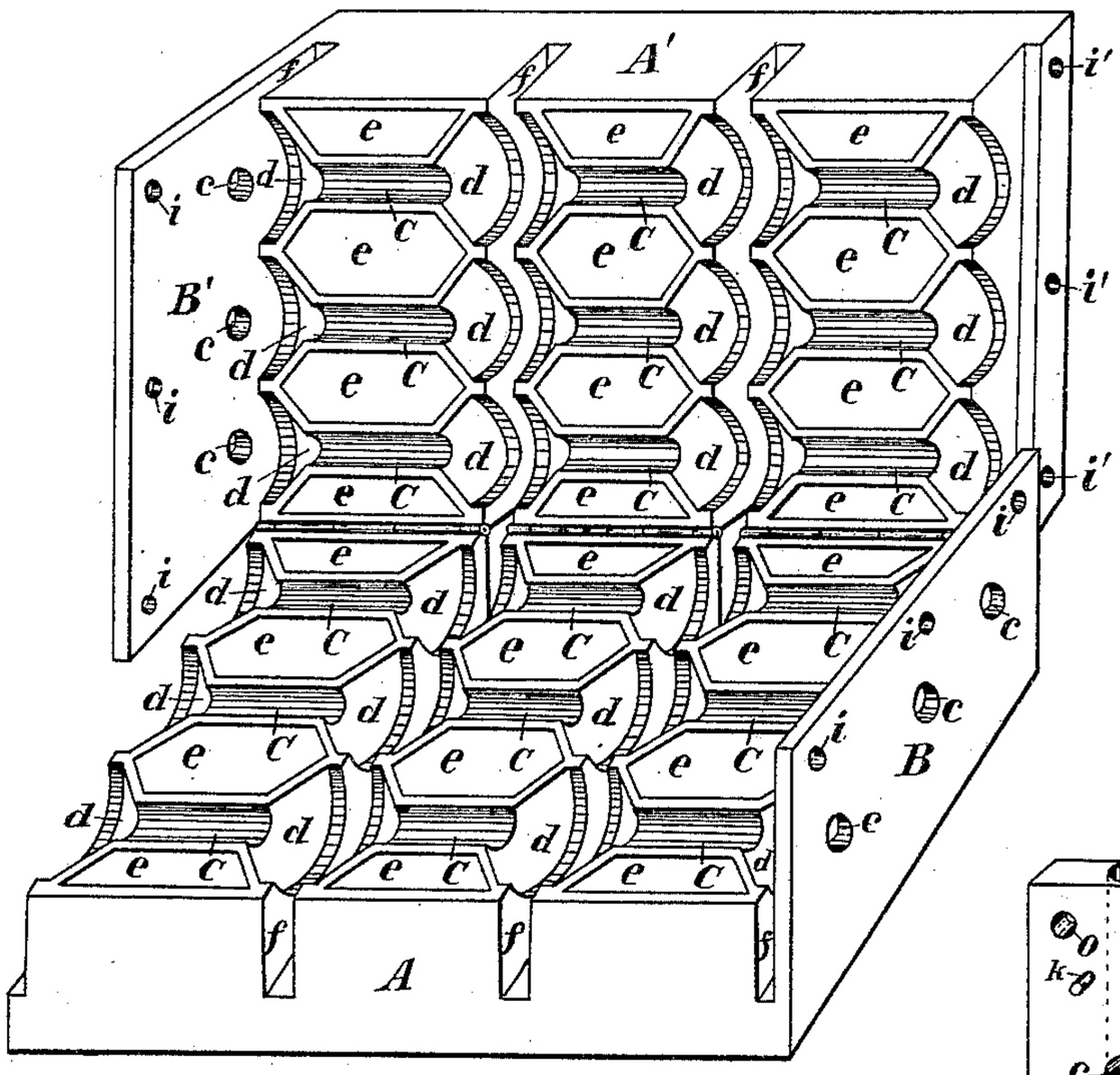

Fig: 1

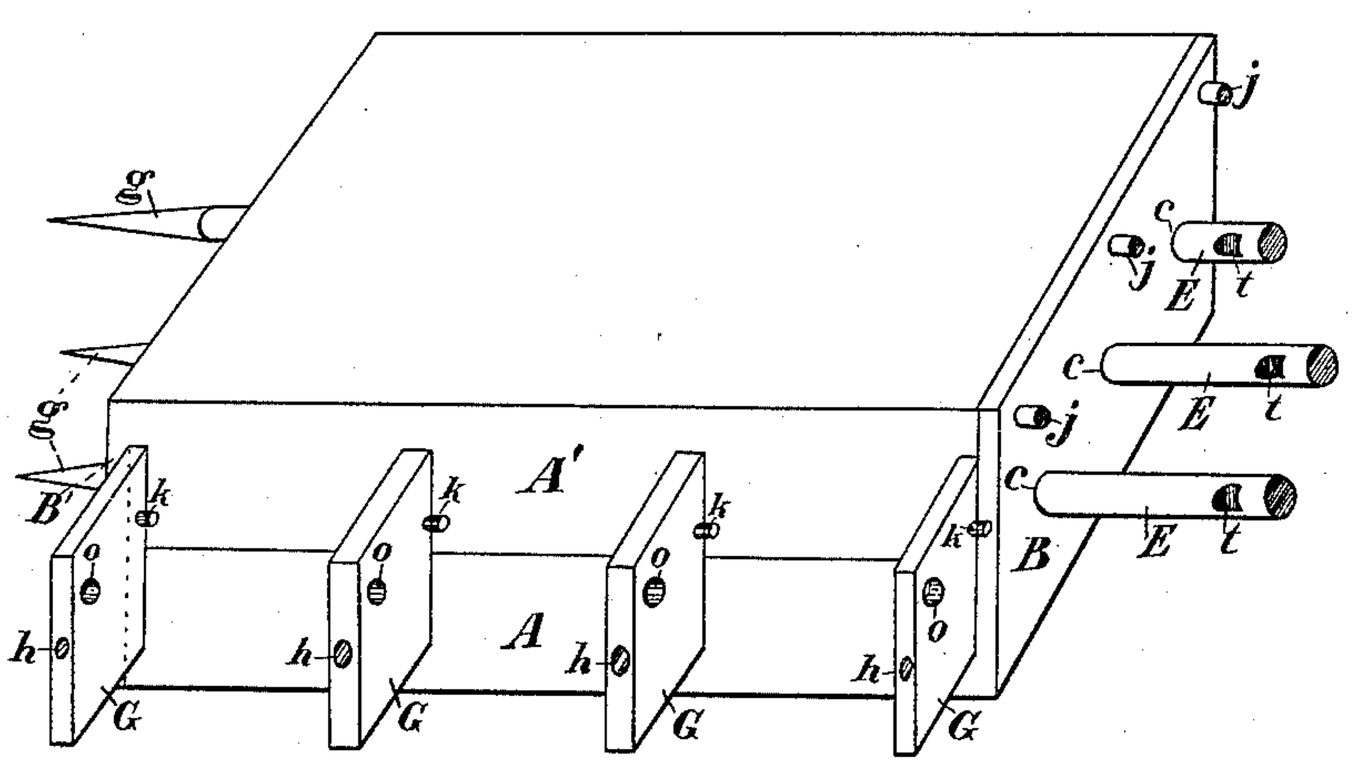

Fig: 2

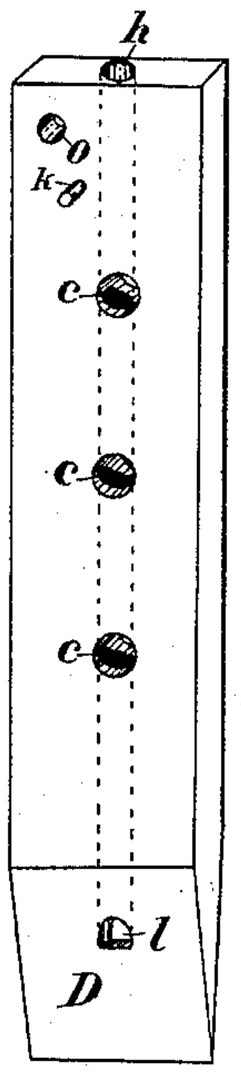

Fig: 4

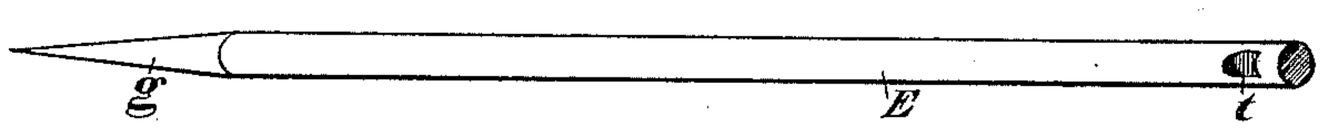

Fig: 3

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ALLEN HACKETT, OF PITTSFIELD, MAINE.

MACHINE FOR MOLDING SPOOLS OR BOBBINS.

SPECIFICATION forming part of Letters Patent No. 432,037, dated July 15, 1890.

Application filed April 1, 1889. Serial No. 305,605. (No model.)

To all whom it may concern:

Be it known that I, ALLEN HACKETT, a citizen of the United States, residing at Pittsfield, in the county of Somerset and State of Maine, have invented a new and useful Improvement in Machines for Molding Spools and Bobbins; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in machines for molding spools and bobbins; and it consists of an improved molding-box constructed in two parts, containing suitable spool-dies cut therein in rows and provided with means for locking the two parts together; also provided with an arrangement wherein the desired pressure can be evenly given to each spool by means of wedge-shaped sliding partitions passing between each row, and pointed perforation-rods forced longitudinally through the center of each spool, substantially as hereinafter fully described and claimed.

Throughout the description reference is made to the accompanying drawings, in which—

Figure 1 is a perspective view of the molding-box opened to show its interior construction and the shape of the dies. Fig. 2 is a perspective view of the molding-box closed and locked, showing its sliding partitions and perforation-rods inserted to produce the desired pressure upon the within-inclosed spools. Fig. 3 is a perspective view of one of the perforation-rods, showing its form and construction. Fig. 4 is a vertical perspective view of one of the central sliding partitions having a wedge-shaped end. Fig. 5 is a like view of one of the end sliding partitions used in my device.

Similar letters of reference refer to correspondingly-like parts throughout the different figures.

The object of my invention is to reduce expense in the manufacture of spools, bobbins, and like articles by producing a machine wherein they can be constructed in large quantities from a cheap material in a simple and perfect manner.

In the drawings, A and A′ represent the two parts of a molding-box constructed from suitable metal and having spool-dies consisting of the shank portions C, with their flanges *d* cut therein side by side in rows, the two parts A and A′ being preferably hinged together, as shown in Fig. 1 of the drawings.

The spool-dies are so cut within the two parts of the molding-box that when the latter is closed and locked together perfect spool-cavities are formed. These spool-dies are cut as near each other as possible, arranged in rows, and the portions *e* between each die are hollowed out, leaving narrow contact edges at each side of each spool-die, for a purpose to be hereinafter explained.

At the end of each spool cavity or die deep vertical grooves *f*, alike in both portions A and A′ of the mold-box, are cut from the meeting surfaces of the mold to below the depth of the spool-die flanges *d* and extending transversely through the mold-box between each row of spool-dies, thus uniting them. At the ends of the mold-box the grooves *f* (which I will now term "partition-grooves") are made one-half as thick as the central partition-grooves, though they extend entirely through the mold-box in a similar manner.

The mold-box is provided at opposite ends with extensions B B′, which preferably project from opposite halves A and A′ sufficiently to lock or be provided with means to lock the two portions together; and I have provided these extensions B and B′ each with a row of holes *i* near their edges, which coincide with similar holes *i′*, drilled in the ends of its neighbor portion when the two are shut together. Pins *j*, inserted in these holes *i* and *i′*, firmly fasten the two parts A and A′ of the mold together. Other means may be devised for locking the two portions of the mold-box together; but I consider this arrangement as simple and efficient as any. The extensions B and B′ of the mold-box also contain holes *c*, drilled therethrough, of a size equal to the intended central openings in the spools to be manufactured. The holes *c* are therefore located in regard to the spool-shank dies C in the mold so that a rod inserted in the said holes *c* will pass longitudinally through the center of the spool-dies in that section. The

number of these holes or perforation-rod openings *c* is regulated by the number of spool-dies in a row cut within the mold-box.

As the transverse partition-grooves *f* connect the ends of the spool-dies when the latter are filled, the partition-grooves are filled also, and to form the filling material into the separate spools and produce pressure upon them at the same time I provide sliding partitions G, fitting the grooves *f*, and construct them with their forward ends tapering or wedge-shaped, as shown in Figs. 4 and 5 of the drawings. The wedge-shaped points D of the sliding partitions G when inserted in the partition-grooves *f* will force the spool material therein each way into the ends of the spool-dies, producing pressure upon the flange portion of the spools, besides separating the latter. These partitions G should be constructed of metal of sufficient length to extend entirely through the molding-box and of a width and thickness to exactly fill the partition-grooves *f* in the molds. The said partitions G have one end formed into a long tapering wedge D and their opposite ends provided with a small hole *o* drilled therethrough or otherwise suitably arranged to furnish means for their withdrawal. These ends of the partitions are also provided with stops *k*, which can be short pins inserted in holes drilled through the partitions at the proper place or small shouldered bosses cast upon them to prevent their being pushed through the mold too far.

Each sliding partition G has perforation-rod openings *c* the same size and distance from each other as the correspondingly-similar openings *c*, drilled through the extensions B and B′ of the mold-box. These perforation-rod openings *c* are drilled transversely through the center of the partitions G in exact coincidence with each other, and also (when thrust within the partition-grooves *f* of the mold-box) coincide with the same openings *c* in the mold-box extensions.

The perforation-rod openings *c* in each partition G are connected transversely by a hole *h*, bored longitudinally through the partitions, and a lateral hole *l*, drilled through the wedge-shaped end D of the said partitions at the extremity of this longitudinal hole, forms another outlet for the same. The main purpose for these longitudinal holes *h* within the partitions G is to allow the escape of water from within the mold-box when the material in the spool-dies is being compressed.

Further attachments belonging to my spool-molding device are the perforation-rods E, which are round rods taper-pointed at one end and provided with notches *t* at their opposite ends to furnish means for their withdrawal. These perforation-rods are constructed of a like diameter their entire length, (with the exception of the tapered portion of the same,) and they are made of a size to exactly fit the perforation-rod openings *c* in the partitions G and extensions B B′ of the mold-box hereinbefore described, through which they pass in the process of manufacturing the spools. Their office is to form the central openings in the spools and compress the cylinder or shank thereof.

The operation of manufacturing spools from pulp with my machine is as follows: The two parts A and A′ of the mold are laid flat and their cavities and dies therein filled with pulp mixed to the proper consistency. A scraper (which can be anything having a straight edge) is drawn over the surface, evening the pulp or filling material with the edges of the dies, the surplus being scraped off the mold. The two parts A and A′ of the mold are now shut together and locked by inserting the pins *j* through the holes *i* and *i′* in the extensions B B′ and in the ends of the mold. At this locking up of the mold comes in the advantage of having the cavities *e* between the spool-dies, for if the spaces between the dies were solid metal and particles of pulp remained upon them an enormous pressure would be required to lock the two parts of the mold together, which latter would never come in close contact, but spring at the places containing the compressed pulp. This would leave a noticeable seam upon every spool so made; but by having the cavities *e* between the spool-dies, leaving a narrow edge at the two sides of the latter, any pulp remaining between them would in locking the mold be pressed each side into the said cavities and spool-dies. The pins *j*, for locking the mold-box, should be constructed with tapered points. Then, while being driven into the holes *i* and *i′*, they would naturally draw and force the two parts of the mold closely together. After the mold has been filled and locked the wedge-shaped ends D of the sliding partitions G are inserted into the grooves *f*, and all forced through the latter at the same time by the use of a purchase-lever or other means. The stops *k* upon the partitions prevent them from being shoved through too far, and the longitudinal holes *h* within them, with their forward entrances *l*, in combination with the transverse perforation-rod openings *c*, permit the exit of water from the compressed material. It is now easily understood that when the wedge-shaped points D of the sliding partitions G pass through the pulp within the mold they press the said pulp equally each side into the flanges *d* of the spool-dies, and as the partitions passing through the two end grooves *f* of the mold are only one-half the thickness of the central partitions, and are also constructed with only one slope to their wedge-shaped ends, the same amount of pressure will be exerted upon the ends of the spools in the outer rows of the mold-box as is forced upon their neighbor ends. Thus far only the ends of the spools have been compressed to any considerable extent, and in order to equally condense the shank or remaining portion, and also to form the central spool-openings therein, the perfo-

ration-rods E are forced through the holes *c*, passing entirely through the mold lengthwise, and then withdrawn to allow the water to drain out from the compression, when they are again inserted and the mold and its contents set away for a few moments in a warm or heated place, where the spools will harden sufficiently for removal. After sufficiently seasoned to permit handling the perforation-rods E are first withdrawn, then the sliding partitions G, the mold then unlocked, and the spools taken therefrom and placed in an oven or other suitable drying-place to thoroughly harden for use.

Spools constructed in this manner will be perfect in form and size, and will harden to the consistency of natural wood.

After the molds have once been used they should be thoroughly swabbed out with oil or other substance to prevent sticking of the pulp, and also to produce a glaze upon the spools.

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

1. A spool-casting mold, for the purpose described, consisting of the parts A A′, containing spool-dies cut therein, partition-grooves between each row of dies, and means for locking the two parts together, substantially as shown and set forth.

2. A spool-casting mold constructed in two parts, containing spool-dies cut therein, and partition-grooves extending therethrough across the ends of each spool-die between each successive row, and having extensions B B′ at opposite ends of each part adapted to shut by, and provided with means for locking the two parts together, substantially as shown and described.

3. A spool-casting mold constructed in two parts A A′, having extensions B B′ at opposite ends adapted to shut, and means for fastening the two parts, spool-dies cut therein in rows, with partition-grooves *f* between each successive row separating the ends of the spools, and cavities *e* between each spool-die, for the purpose described, and substantially as shown and set forth.

4. In a spool-casting mold, the sliding partition G, adapted to slide in grooves cut in said molds and having suitable stops *k*, and transverse openings *c*, one end of said partitions formed in the shape of a wedge and their opposite ends provided with means for withdrawing, substantially as shown, and for the purpose described.

5. In a spool-casting mold having spool-dies and partition-grooves at the ends of each die, the sliding partitions G, adapted to slide within said grooves and separate the ends of each spool, said partitions constructed with wedge-shaped ends and provided with suitable stops and having transverse openings *c*, for the purpose described, and longitudinal openings *h*, connecting the transverse openings, and provided with means for the withdrawal of the said partitions, substantially as shown and set forth.

6. A spool-casting device for the manufacture of pulp spools, consisting of the combination of the spool-casting mold constructed in two parts A and A′, having spool-dies cut within them, the transverse partition-grooves passing through the ends of each spool-die, cavities *e* between the said dies, extensions B B′, shutting by the ends of the mold, having means for fastening the same and perforation-rod openings *c* within them, with the sliding partitions G, having wedge-shaped ends and perforation-rod openings *c*, means for withdrawing the said partitions, stops for the same, and longitudinal openings *h*, connecting the perforation-rod openings with the perforation-rods E, having one end pointed and tapered, for the purpose described, and their opposite ends provided with means for their withdrawal, all substantially as shown, and adapted to be operated in the manner set forth and described.

7. In a mold for casting spools or other cylindrical bodies from pulp or soft material, the perforation-rods E, having one end pointed and tapered and its opposite end provided with means for its withdrawal, said perforating-rod passing longitudinally through the mold, and cylindrical material therein to compress the latter, substantially in the manner as shown and described.

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