

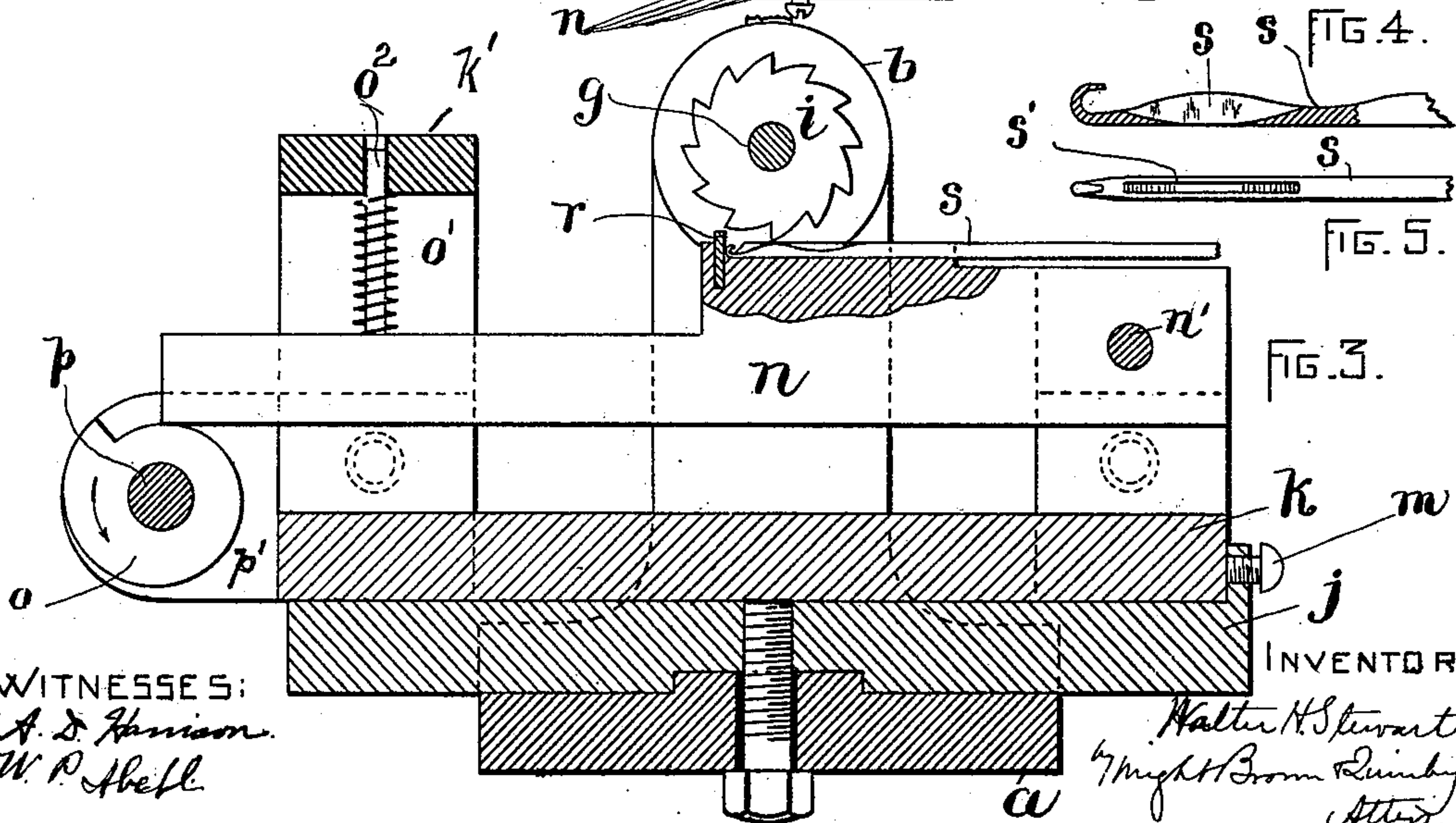
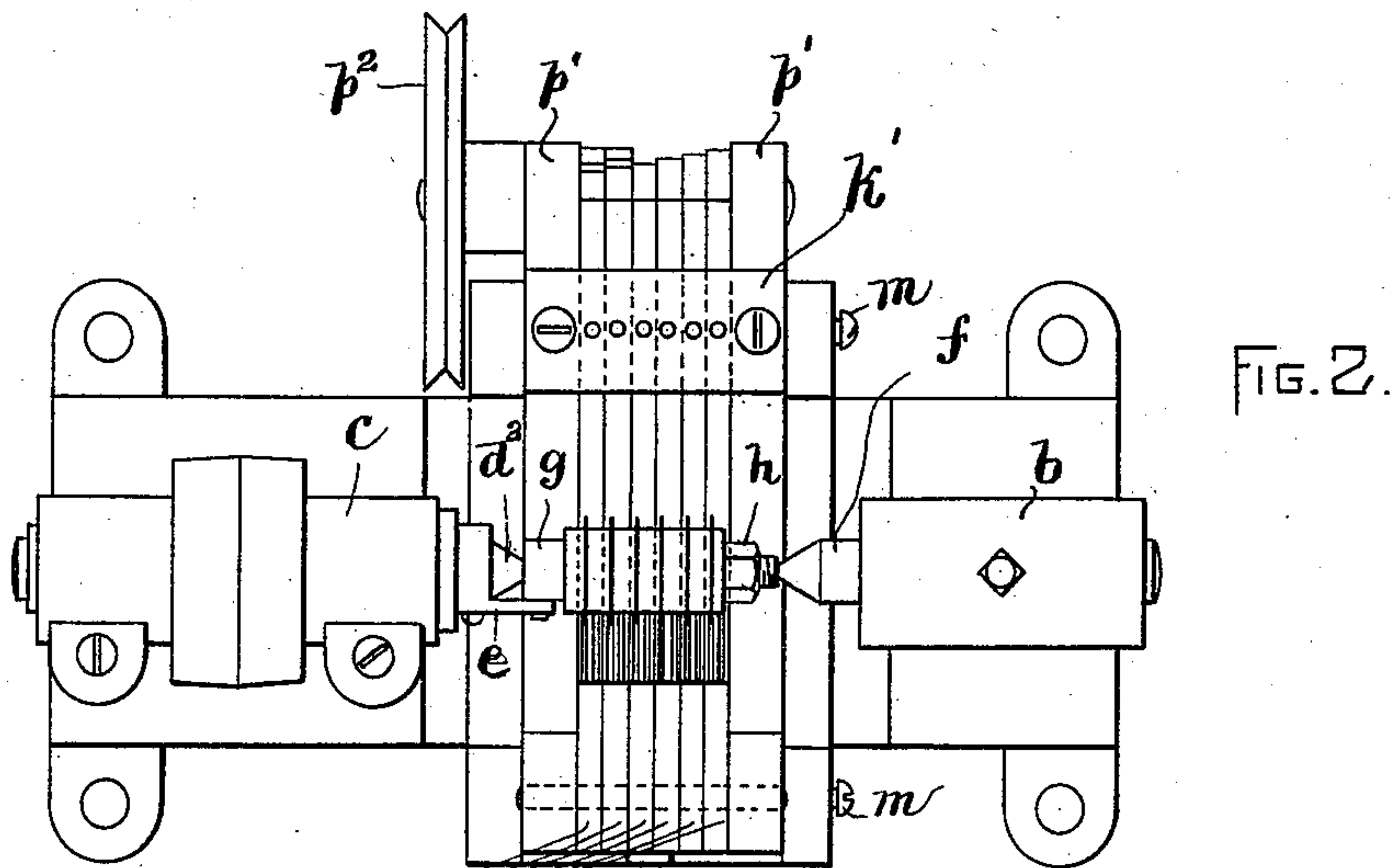
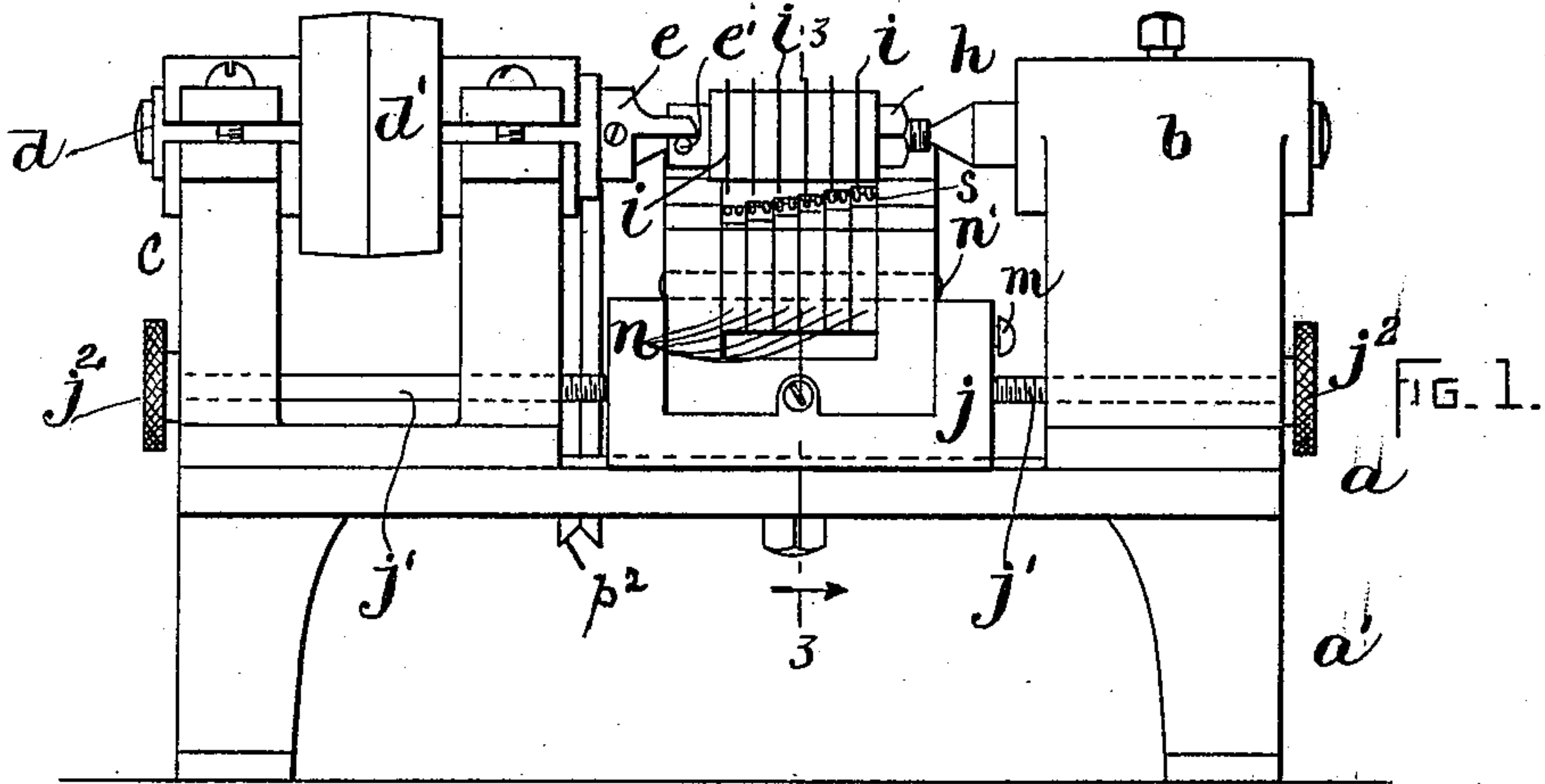
(No Model.)

W. H. STEWART.

MACHINE FOR GROOVING KNITTING MACHINE NEEDLES.

No. 557,169.

Patented Mar. 31, 1896.



WITNESSES:  
A. S. Hanson.  
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Atty.



# UNITED STATES PATENT OFFICE.

WALTER H. STEWART, OF FRANKLIN, NEW HAMPSHIRE.

## MACHINE FOR GROOVING KNITTING-MACHINE NEEDLES.

SPECIFICATION forming part of Letters Patent No. 557,169, dated March 31, 1896.

Application filed September 9, 1895. Serial No. 561,927. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER H. STEWART, of Franklin, in the county of Merrimac and State of New Hampshire, have invented certain new and useful Improvements in Machines for Grooving Knitting-Machine Needles, of which the following is a specification.

This invention relates to machines for grooving that class of knitting-machine needles which are equipped with latches, the grooves being made to receive the latches.

The invention has in view to provide a machine of increased capacity and efficiency for performing this work; and to this end it consists in a number of novel constructions and combinations of parts which are recited in the appended claims.

The drawings which accompany and form part of this specification illustrate an embodiment of the invention.

Figure 1 shows a front elevation of the machine. Fig. 2 shows a top plan view of the same. Fig. 3 shows a section on line 3 3 of Fig. 1. Figs. 4 and 5 show, respectively, a sectionalized side elevation and an edge view of part of a grooved needle which has been through the machine.

The letter *a* designates a suitable base mounted on legs *a'* and supporting head and tail stocks *c* and *b*, in the former of which is journaled a shaft or arbor *d*, carrying affixed to its middle portion a pulley *d'*, adapted to receive power from any suitable source. Said arbor has at its inner end a tapered center *d''*, and a dog *e*, fastened to it at the base of said center and projecting out along the same. The tail-stock is bored to receive a center *f*, which is longitudinally adjustable in said tail-stock and designed to be fixed at different adjustments therein. The two centers support an arbor *g*, suitably formed at its end to engage the centers and shouldered near one end and screw-threaded at the opposite end to receive a nut *h*. Between the shoulder and the nut are clamped a gang of circular grooving-cutters *i*, with separating-washers, and these cutters are positively rotated in one direction by the engagement of the dog *e* with a pin *e'* projecting from the arbor.

Between the head and tail stocks there is arranged upon the base *a* a carriage *j*, which

is laterally adjustable on said base and regulated as to position by means of long screws *j'*, journaled in the head and tail stocks and engaging the carriage, said screws having thumb-pieces *j''* in their outer ends. The carriage *j* is made somewhat in the shape of a trough and receives a second carriage *k* of similar form, and which is both vertically and longitudinally adjustable in the carriage *j*, screws *m* being provided to regulate the adjustment.

Between the sides of the carriage *k* there are arranged side by side a number of blocks *n*, which are supported at one end by a pivot-rod *n'*, on which the said blocks are independently movable. At their opposite ends these blocks rest upon cams *o* and are pressed into engagement therewith by springs *o'*, surrounding pins *o''*, which are fastened to the blocks and project into openings in a bridge-piece *k'*, fastened to standards rising from the carriage *k*. The cams are set on a shaft *p*, which is journaled in ears *p'* on the carriage *k* and carries a pulley *p''*, and the said cams are differently set on said shaft, so as to throw their high parts out of alinement into a sort of stepped order. Thereby they are caused to act progressively on the blocks to raise them one after another into operative relation with the cutters.

The blocks are formed in their upper sides with needle-holding channels, there being preferably a plurality of channels in each block to allow for needles of different thicknesses. A small block *r* is set in the end of each groove for the needle *s* to come against, so that it will not slide inward while being cut.

The shaft *p* is turned by means of the pulley *p''* through the medium of the belt or any other desired connection with the source of power. As the shaft *p* rotates, a like motion is given to the cams *o*, and as the latter are differentially set on the shaft they will consecutively act upon the respective blocks *n* to raise the same and bring the needles held thereon into engagement with the cutters. The further rotation of the cam *o* permits the free end of the blocks *n* to drop. The operator can then remove the needle *s*, which has been slotted, as at *s'*, and insert a new blank.



The number of blocks  $n$  may be varied at will. They may be operated singly, as shown, or in sets of two or more.

By my machine I am enabled to progressively feed one or more blanks at a time to the action of the cutters, thereby providing a continuous cutting of the blanks and economizing labor, since the time of the operator is kept employed in removing the cut blanks or needles and inserting new ones. The number of blocks  $n$  and their arrangement, whether singly, as shown, or in sets, will depend upon the output that is desired for the machine and the capacity of the operator to insert and remove the needles or blanks.

The operation will be apparent. The needles to be grooved are placed in the channels of the blocks, and the carriages are properly adjusted. Then the cams are set in motion and they progressively move the needles against the cutters which form the grooves  $s'$  in the needles.

Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination with a gang of circular cutters and means for supporting and rotating the same, of a number of supports for the work arranged beneath the cutters and being separately movable into and out of operative relation therewith, and means for progressively moving said supports into operative position, substantially as and for the purpose described.

2. In a machine of the character described, the combination of a gang of circular cutters, and means for supporting and rotating the same, of a number of blocks pivoted at one end and extending under the cutters, each block constructed to hold one or more needles, and a set of cams arranged to act on said blocks respectively, and move them toward the cutters, substantially as and for the purpose described.

3. In a machine of the character described, the combination of a gang of circular cutters, and means for supporting and rotating the same, of a number of blocks pivoted at one end and extending under the cutters, each block constructed to hold one or more needles, and a set of cams arranged to act on said blocks respectively, and move them toward the cutters, said cams being differently set on a common shaft, and adapted to progressively advance the blocks, substantially as and for the purpose described.

4. In a needle-machine in combination, a series of circular cutters, means for supporting and operating the same, a series of blank-supporting blocks, a series of cams arranged to act on said blocks and to move them progressively toward and away from said cutters, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 10th day of August, A. D. 1895.

WALTER H. STEWART.

Witnesses:

JAMES E. BARNARD,  
FRED A. EASTMAN.