

# PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION.

### Improvements relating to Polishing Machines.

We, ARTHUR GILBERT, a British subject, and the MENTMORE MANUFACTURING Co., LIMITED, both of Eureka Works, 16, Mentmore Terrace, Hackney, London, E. 8, a British company, do hereby declare the nature of this invention to be as follows:—

This invention relates to polishing machines of the kind employing polishing mops and more particularly to those employed for polishing the bodies and caps and other hollow sections of fountain pens but they may be employed for polishing other articles.

Heretofore it has been the practice to present each article to be polished, to the polishing mop by hand, thereby entailing a large outlay for labour.

Now, the invention has for its object to obviate this disadvantage and to this end we provide mechanism for automatically presenting a series of articles in succession to the action of one or more polishing mops and in such a manner that the whole or a portion only, of the exterior surface is polished.

In a suitable arrangement for carrying out the invention we employ a pair of polishing mops arranged in the same plane with their axes parallel and in such proximity that an article passed between them will be acted upon by both mops. The hollow sections to be polished are moved down between the parts of the mops in close proximity, by a rotating carrier or disc mounted upon a shaft which is rotated by suitable gear, such as worm gear driven by a pulley. The said hollow sections are fitted frictionally upon the mandrels which radiate from the periphery of the carrier and also are capable of rotation around their own axes, so that, as the articles carried thereby are passed between the mops, they are correspondingly rotated. This rotation of the mandrels is advantageously effected by bevel pinions thereon which engage with a common bevel wheel which may be rotated by gearing

from the shaft of the carrier, or may be stationary. The carrier is advantageously arranged with its centre below the level of the common horizontal centre line of the two mops, in order that the articles carried by the mandrels shall be at an inclination to the plane of the mops when first engaged with the latter which therefore commence to act at one end only and then gradually along the articles, thus the direction of movement of the parts of the mops in contact with the articles tends to force the articles further on the said mandrels. Moreover, by the gradual action of the mops along the articles the latter are less likely to become heated by the friction set up and consequently less power is required for driving the machine.

Means may be provided for removing the article from the mandrels when polished, for instance, the latter in their rotation may engage with a slot in one end of a straight or curved strip of metal in such a manner that the free and slotted end of the strip comes into contact with a loose roller on the inner end of each mandrel in turn and forces it together with the polished article, from off the mandrel. Or, the loose roller may be dispensed with.

Where solid articles are to be polished, sockets for the reception of the same are employed on the carrier instead of the mandrels.

Instead of the mandrels or sockets being mounted on a disc carrier they may be carried on an endless chain or belt passing round a pair of wheels or pulleys.

It is to be understood that although the invention has been described as being carried out in connection with a pair of mops, one of them may be dispensed with.

Dated the 8th day of June, 1923.

G. F. REDFERN & Co.,  
15, South Street, Finsbury, E.C. 2,  
Agents for the Applicants.

[Price 1/-]

## COMPLETE SPECIFICATION.

## Improvements relating to Polishing Machines.

We, ARTHUR GILBERT, a British subject, and the MENTMORE MANUFACTURING Co., LIMITED, both of Tudor Grove, Well Street, Hackney, London, E. 9, formerly of Eureka Works, 16, Mentmore Terrace, Hackney, London, E. 8, a British company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to polishing machines of the kind employing polishing mops and more particularly to those employed for polishing the bodies and caps and other hollow sections of fountain pens but which may be employed for polishing other articles.

According to this invention we provide mechanism for automatically presenting a series of articles having their axes in a common plane and radiating from a common centre in succession to the periphery of a single polishing mop or to the opposed peripheries of a pair of polishing mops and in such a manner that the whole, or a portion only, of the exterior surface of each article will be polished.

In a suitable arrangement for carrying out the invention we employ a pair of polishing mops arranged in the same plane with their axes parallel and in such proximity that an article passed between them will be acted upon by both mops. The hollow sections to be polished are moved between the parts of the mops in close proximity, by a rotating carrier or disc mounted upon a shaft which is rotated by suitable gear, such as worm gear driven by a pulley. The said hollow sections are fitted frictionally upon the mandrels which radiate from the periphery of the carrier and also are capable of rotation around their own axes, so that the articles, as they are carried thereby, are passed between the mops, and are correspondingly rotated. This rotation of the mandrels is advantageously effected by bevel pinions thereon which engage with a common bevel wheel which may be rotated by gearing from the shaft of the carrier, or may be stationary. The carrier is advantageously arranged with its centre below the level of the common horizontal centre line of the two mops, in order that the articles carried by the mandrels shall be at an inclination to the plane of the

mops when first engaged with the latter which therefore commence to act at one end only and then gradually along the articles, thus the direction of movement of the parts of the mops in contact with the articles tends to force the articles further on the said mandrels. Moreover, by the gradual action of the mops along the articles the latter are less likely to become heated by the friction set up and consequently less power is required for driving the machine.

Means may be provided for removing the articles from the mandrels when polished, for instance, the latter in their rotation may engage with a slot in one end of a straight or curved strip of metal in such a manner that the free and slotted end of the strip comes into contact with a loose roller on the inner end of each mandrel in turn and forces it together with the polished article, from off the mandrel. Or, the loose roller may be dispensed with.

Where solid articles are to be polished, sockets for the reception of the same are employed on the carrier instead of the mandrels.

The mandrels or sockets, instead of being mounted on a disc carrier, may be carried on an endless chain or belt passing round a pair of wheels or pulleys one of which serves for presenting the said mandrels or sockets to the mop or mops and carries the common bevel-wheel with which the pinions on the mandrels or sockets mesh. The mandrels or sockets are arranged at right angles to the surface of the belt. This disposition of the sockets or mandrels is hereinafter referred to as radial.

It is to be understood that although the invention has been described as being carried out in connection with a pair of mops, efficient results may be obtained by the use of one mop only.

To enable the invention to be fully understood, we will describe it by reference to the accompanying drawing, in which:—

Figure 1 is a sectional front view of a polishing machine constructed in accordance with the invention.

Figure 2 is a sectional plan thereof.

Figure 3 is a side view of the machine.

Figure 4 is a side view illustrating a modification and

Figure 5 is a plan thereof.

Referring to Figures 1 to 3, *a* is a

base-plate forming part of the frame of the machine and  $b, b$  are the two polishing mops carried on spindles  $c, c$  in bearings  $d, d$  in standards  $e, e$  on the said base, the said mops being in the same plane with their axes parallel and with their peripheries in such proximity that an article to be polished passed between them will be acted upon by them both.

10  $c^1, c^1$  are pulleys on the spindles  $c, c$  for rotating the mops in opposite directions.

The two standards  $e$  are arranged to slide in guides  $f, f$  on the base  $a$  so that the mops can be moved towards or away

15 from one another to vary the polishing effect on the article being treated by them, the said standards being moved by a right and left-hand screw  $g$  carried in bearings  $h$  beneath the base  $a$  and

20 engaging nuts  $i, i$  on the said standards, the said screw being operable by a hand-wheel  $j$ .

$k$  is the rotary carrier or disc for supporting the sections to be polished by the mops  $b$  and presenting them to the latter, the said carrier being mounted on the shaft  $l$  which is supported in bearings  $m, m$  in a headstock  $n$  fixed to the base  $a$ , by screws  $n^1$  passing through slots

30  $n^2$  in the said base, the carrier being rotated in the direction of the arrow, Figure 3, from the cone pulley  $o$  through the medium of the shaft  $p$  and worm gearing  $q$ .  $r, r$  are the mandrels projecting radially from the disc  $k$  and mounted in bearings  $r^1, r^1$  therein on which mandrels are fitted frictionally the hollow sections to be polished, one of which is indicated in section at A Figure

40 3. The said mandrels are shown in the drawing as being split for a portion of their length, as indicated at  $r^2$ , so as to divide them into spring portions  $r^3$  which yield when pressed together and allow

45 of the hollow sections being easily fitted thereon, the said portions then tending to spring apart and thus hold the hollow sections securely in position.  $s, s$  are the bevel pinions on the mandrels  $r$  and  $t$  is the common bevel-wheel with which all the said pinions mesh and which is

50 rotated by the shaft  $l$  through the medium of the gear-wheels  $t^1, t^2, t^3, t^4$ ; or the said wheel  $t$  may be held

55 stationary.

As shown clearly in Figures 1 and 3, the carrier  $k$  is arranged with its centre below the level of the common horizontal centre line of the mops  $b$  in order that

60 the articles carried by the mandrels shall be at an inclination to the plane of the mops when first engaged by the latter, which mops therefore commence to act on one end of the said articles and then

65 gradually along the articles. By this

arrangement it will be understood that the movement of the parts of the mops in contact with the articles tends to force the latter farther on the mandrels. Further, by the resulting gradual action

70 of the mops along the articles, the latter are less likely to be heated by the friction set up and consequently less power is required to drive the machine.

As shown clearly in Figure 3 the mop  $b$  is of a width sufficient to polish the articles A their full length. If therefore it is required to polish the said articles only a portion of their length a mop of less width than that shown can be substituted, or the head stock  $n$  can be adjusted with respect to the mop by loosening the screws  $n^1$  and moving them in the slots  $n^2$ .

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In the machine just described, the articles A to be polished are applied to, and removed from the mandrels  $r$  by hand. Figures 4 and 5, however, illustrate the arrangement for removing the articles from the mandrels automatically.

90 In this arrangement  $u$  is the strip of metal slotted as at  $u^1$ , with which slot the mandrels  $r$  engage in turn after the polishing operation, the strip being curved, as shown, so that in the rotation of the carrier each mandrel will pass in turn into the slot  $u^1$ , the strip  $u$  engaging

95 beneath a loose roller  $u^2$  provided on each mandrel and forcing it, together with the polished article, on the mandrel from off the latter. The loose collar  $u^2$  may, however, be dispensed with.

Although we have described the article to be polished exteriorly as being hollow and, therefore, necessitating the use of mandrels to fit within them, it is to be understood that solid articles can also be polished by the machine in which case sockets would be arranged on the carrier  $k$  or endless chain or belt, in which the articles would be clamped.

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Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

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1. A polishing machine of the kind hereinbefore referred to, provided with means for automatically presenting a series of articles having their axes in a common plane and radiating from a common centre in succession to the periphery of a single polishing mop or to the opposed peripheries of a pair of polishing mops in such a manner that the whole, or a portion only, of the exterior surface of each article will be polished.

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2. A polishing machine as claimed in Claim 1, comprising a pair of rotary polishing mops arranged in the same

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plane with their axes parallel and their peripheries in such proximity that an article passed between them will be acted upon by them both, a rotary carrier or an endless chain or belt having mandrels or sockets upon or in which the articles to be polished are mounted, the said carrier or chain or belt being so positioned as to pass the said mounted articles between the parts of the mops in close proximity, and means for rotating the mandrels or sockets simultaneously with the rotation of the carrier or the motion of the belt or the like.

3. A polishing machine as claimed in Claim 1, comprising a single polishing mop, a rotary carrier or an endless chain or belt having radial mandrels or sockets upon or in which the articles to be polished are mounted, the said carrier or chain or belt being so positioned as to bring the said mounted articles into contact with the periphery of the mop and means for rotating the mandrels or sockets simultaneously with the rotation of the carrier or the motion of the belt or the like.

4. A polishing machine as claimed in Claims 2 or 3 wherein the means for rotating the mandrels or sockets comprise bevel pinions on the said mandrels or sockets and a driving bevel-wheel common to all the said pinions, the said wheel being either stationary or rotated by

gearing from the shaft of the carrier or of one of the wheels carrying the endless belt or the like.

5. A polishing machine as claimed in Claim 4 wherein the carrier or belt wheel concentric with the bevel wheel is arranged with its centre below the level of the horizontal centre line of the mop or mops for the purpose set forth.

6. A polishing machine as claimed in Claims 2 or 3 and in which the articles to be polished are frictionally mounted on mandrels, wherein means are provided for automatically removing the article from the said mandrels after the polishing operation.

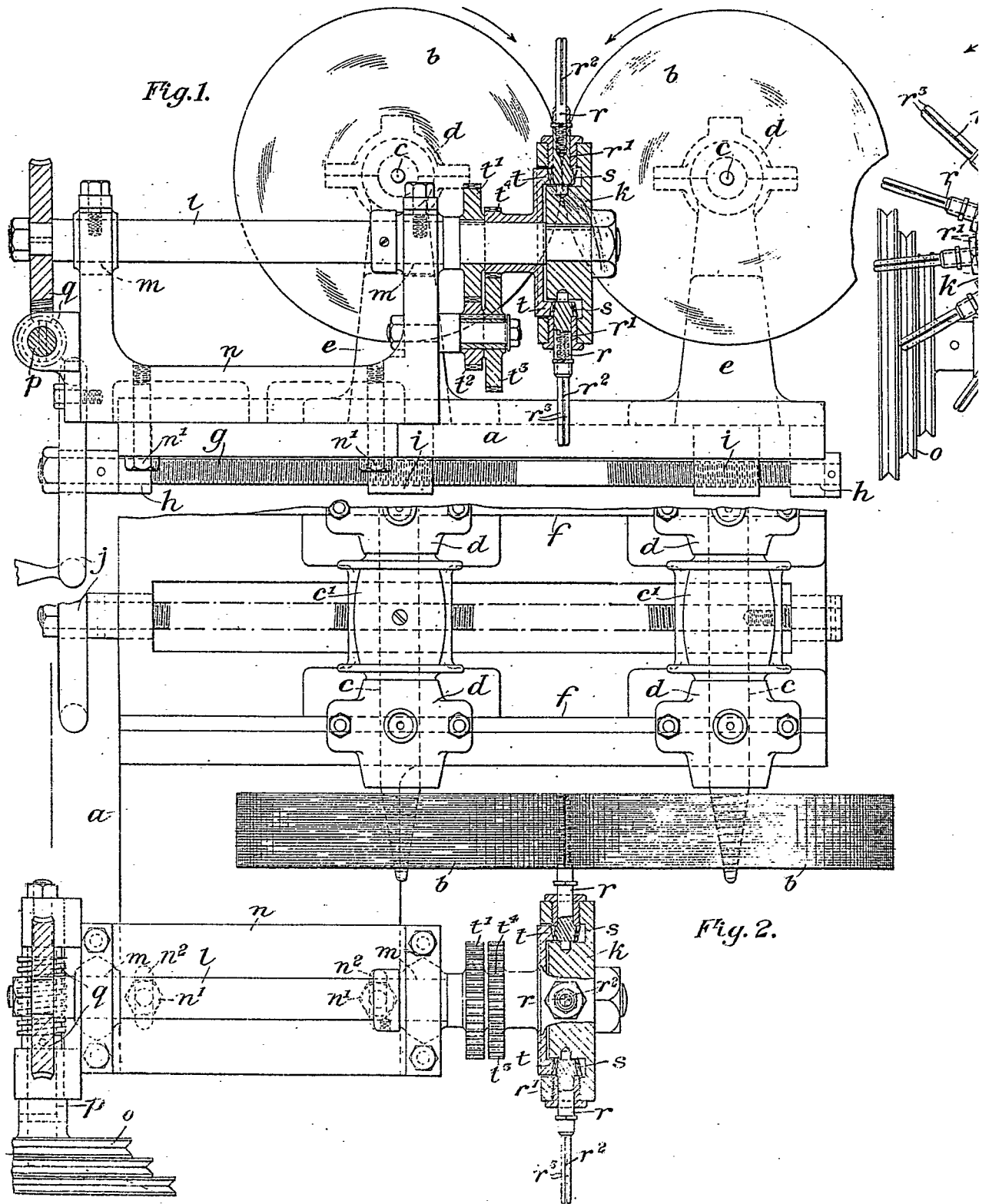
7. A polishing machine as claimed in Claim 6 wherein the means for automatically removing the polished articles from the mandrels comprise a straight or curved strip slotted from one end to enable each article in its movement around the carrier or a belt wheel axis to engage with the said strip, whereby it is forced by the latter off the mandrel.

8. The improved polishing machine, constructed arranged and operating as hereinbefore described and illustrated in the accompanying drawing.

Dated this 10th day of March, 1924.

G. F. REDFERN & Co.,  
15, South Street, Finsbury, E.C. 2,  
Agents for the Applicants.

[This Drawing is a reproduction of the Original on a reduced scale]



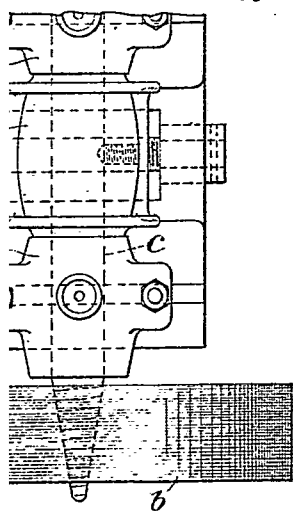
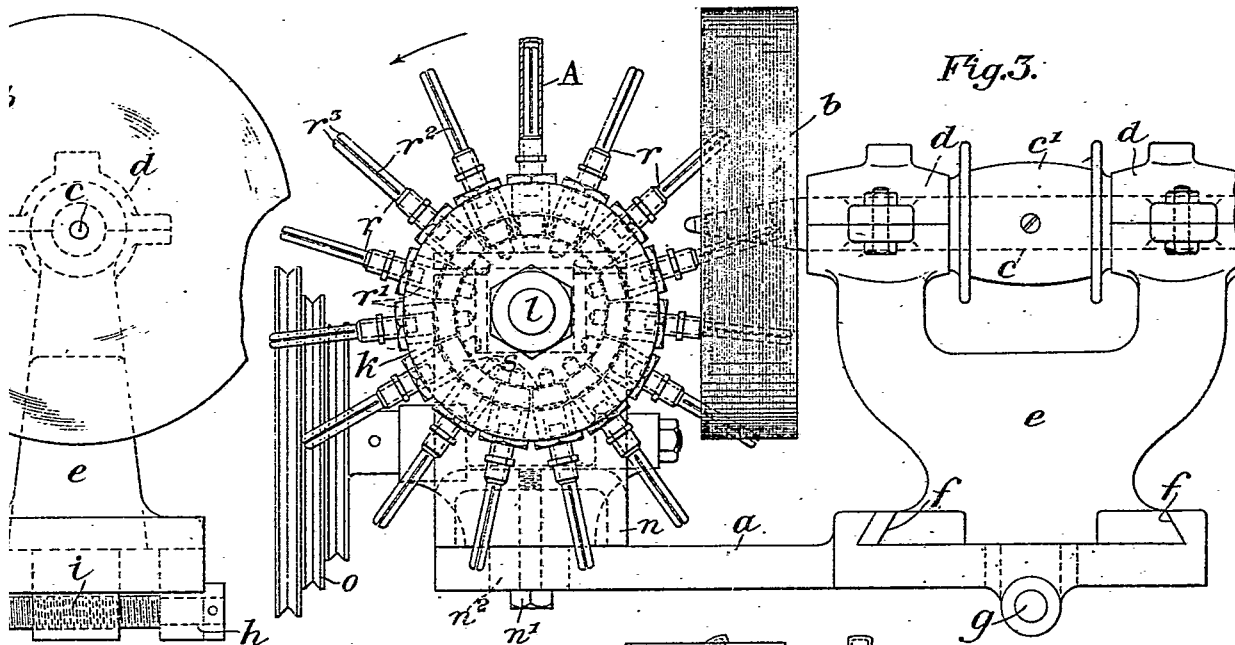


Fig. 2.

Fig. 4.

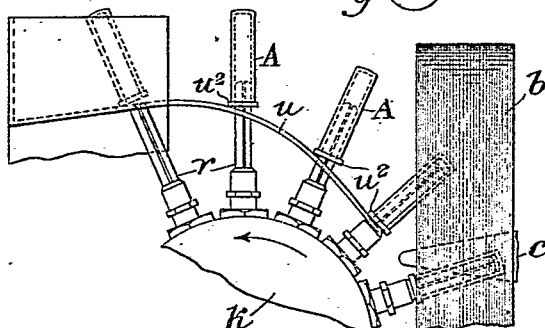
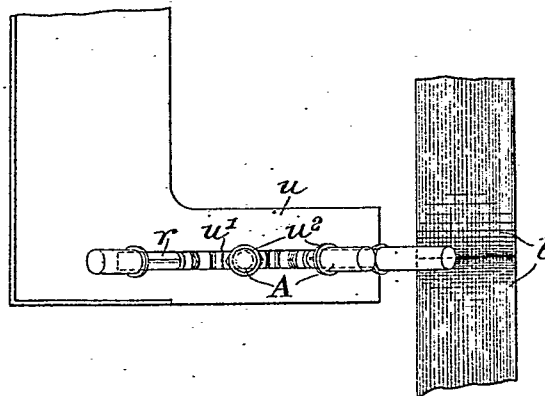


Fig. 5.



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QUALITY**

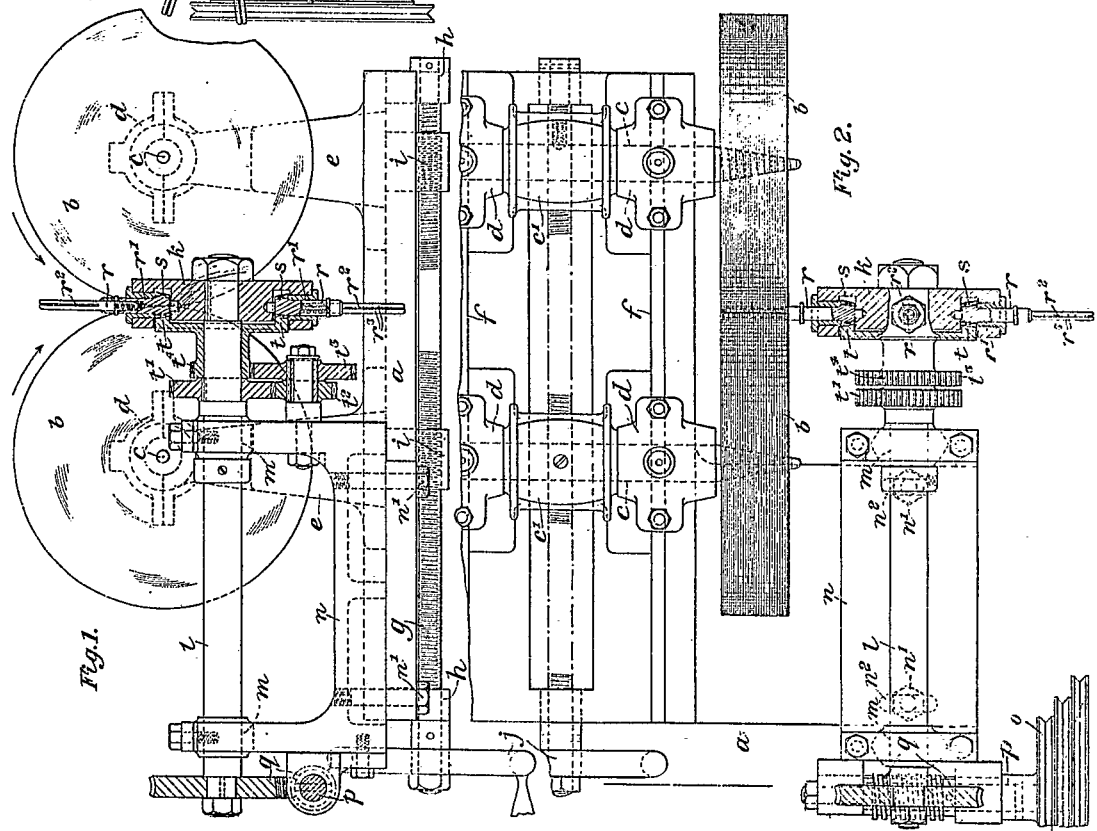


Fig. 1.

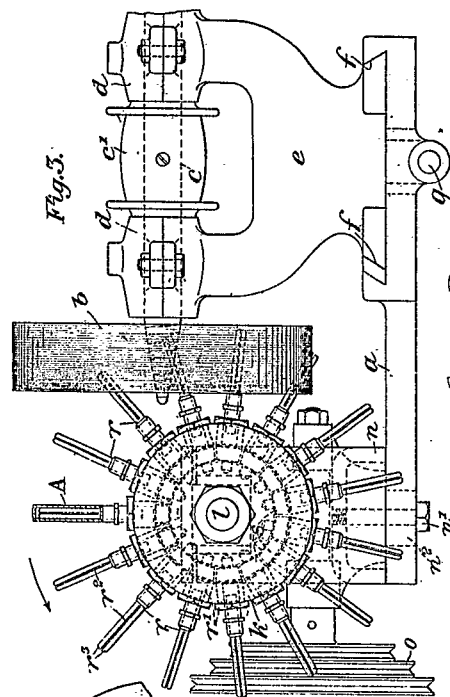


Fig. 3.

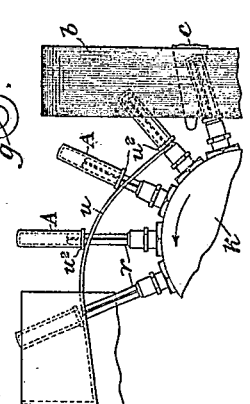


Fig. 4.

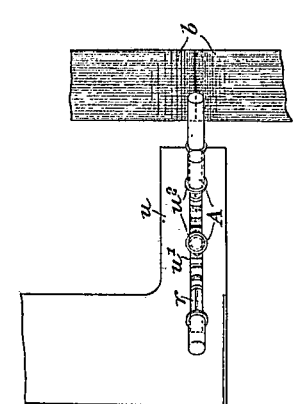


Fig. 5.

[This Drawing is a reproduction of the Original on a reduced scale]

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