N° 18,103 A.D. 1911

Date of Application, 10th Aug., 1911

Complete Specification Left, 11th Mar., 1912—Accepted, 12th Aug., 1912

PROVISIONAL SPECIFICATION.

Improvements in or relating to Time-checking or Recording Apparatus for Workmen and the like.

I, ARTHUR HENRY GLEDHILL, A.M.I.M.E., of 22, Ventnor Terrace, Halifax, in the County of York, Engineer, do hereby declare the nature of this invention to be as follows:—

This invention relates to time checking or recording apparatus such as is employed in workshops, factories, and the like, for card costing jobs, and has for its chief object to prevent loss of time being occasioned by a workman or operative between the completion of one job and the commencement of another one, a further object being to obtain a duplicate record of the data indicated upon the cards for office use.

According to this invention the time at which one job is completed and another one commenced is mechanically indicated upon cards and a duplicate record thereof is simultaneously produced and retained within the apparatus until required for office use. For this purpose the apparatus is provided with a series of printing or impressing members that are set to produce the required data upon the operative's card which is inserted between such members and a platen, relative movements of such parts in a direction towards and away from each other effecting the printing or impressing operation. The duplicate record is obtained by means of a strip of paper or the like, and an inking or other marking ribbon interposed between the aforesaid members and the platen, and provided with a traversing or feed motion.

In one arrangement each of the aforesaid printing or impressing members may comprise a disc rotatably mounted upon a shaft, and formed on one portion of its periphery with a number of recesses or projections, and on another portion with embossed or projecting letters or figures, any one of which can be brought into line with the aforesaid platen by a style or key arranged to engage with the aforesaid recesses or projections, suitable means being provided for determining the adjusted positions of the discs. A number of the latter are employed side by side, the embossed letters or figures thereon being capable of producing the required data upon the card, such for example as the operative's number, the date, the number of the job completed, the time upon which the job was commenced or finished, and the number of the job to be next dealt with. The aforesaid platen extends across the discs and is conveniently situated underneath the same and arranged to be moved towards and away from the discs by the operator. For this purpose the platen may be retained in its upper or printing position by means of one or more springs, and be moved away from the discs by a lever manipulated by the operative and carrying a detent engaging with a ratchet wheel provided with one or more tappets adapted to engage with a tappet projecting from the platen or its support, the arrangement being such that a partial movement of the lever withdraws the platen to a sufficient extent for the insertion of the card, a further movement withdrawing the platen to its full extent and releasing the same after the tappets on the ratchet wheel and platen become disengaged, whereupon the latter is suddenly returned by the spring and causes the printing operation to be effected.

The strip for producing the duplicate record is mounted upon two spools

[*Price* 8*d*.]

and together with an inking ribbon passes between the platen and the printing discs, the necessary feed or traverse of the record strip being conveniently effected by an operative connection between the aforesaid lever and one of the spools, such for example as a pawl operated by the reverse movement of the lever to impart motion to a ratchet wheel carried by the aforesaid spool.

In an alternative arrangement, operating levers may be substituted for the aforesaid discs, each of such levers terminating in a sector provided with letters and numerals for effecting the printing or impressing operation and working in conjunction with a stop for determining the movement of the levers. In an alternative arrangement the latter may be geared to discs similar to those already described. If desired the discs or levers bearing the time indications may be operated from a time clock, but this is not absolutely necessary owing to the fact that any preceding or succeeding entry is not open to inspection by the operative, consequently the latter is bound to record correct time.

At each setting of the machine two impressions are made, one on the card of the job completed, and the other on the card of the job about to be commenced, and a complete card cannot be made out for a finished job until the number of the new job is ascertained, whereupon such number is marked upon the card appertaining to the finished job. The card relating to the new job bears the date and time on which the previous job was completed and the number thereof, the said time also being the time of commencement of the new job.

Dated this 9th. day of August, 1911.

BRIERLEY & APPLEYARD,
Penny Bank Chambers, Halifax,
Agents for the Applicant.

COMPLETE SPECIFICATION.

Improvements in or relating to Time-checking or Recording Apparatus for Workmen and the like.

I, Arthur Henry Gledhill, A.M.I.M.E., of 22, Ventnor Terrace, Halifax, in the County of York, Engineer, 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 time checking or recording apparatus such as is employed in workshops, factories, and the like, for card costing jobs, and has for its chief object to provide means for printing on each job card or time sheet a record showing the starting and finishing time of the job, the job number and the numbers of the preceding and succeeding jobs, also to provide a duplicate record of such entries to enable the cost clerk to know that every minute of time has been accounted for on one card or another by simply glancing down the duplicate record to see that there are no blanks in either of the job number columns; thereby saving the enormous amount of time that is at present expended in summarizing all the job cards to ascertain whether they agree with the weekly pay roll or to find out what percentage of time has been omitted.

According to this invention the job number, the time at which the same is completed and another one commenced and its job number are mechanically printed upon cards or upon a time sheet and a duplicate record thereof is simultaneously produced and retained within the apparatus until required for office use. For this purpose we make use of a known combination of parts comprising a series of manually operated discs supported upon a shaft and formed on one portion of their peripheries with setting recesses or projections, on another

portion with embossed or projecting letters or figures and on a third portion with retaining recesses or projections, the said letters or figures operating in the known manner with a mechanically actuated printing hammer or platen and a duplicating record strip.

In order that the said invention may be clearly understood and readily carried into effect, the same is described more fully with reference to the accompanying drawings, in which:—

Figure 1, is a vertical section of part of a machine constructed in accordance with this invention.

Figure 2, is a similar view shewing the mechanism for imparting movement to the platen.

Figure 3, is a vertical section shewing a platen adapted for use in connection with time sheets and means for returning the printing or impressing members to their initial position.

Figure 4, is a plan of the printing or impressing members and a portion of the surrounding casing.

Figures 5, 6 and 7, illustrate three consecutive job cards, and

Figure 8, illustrates a portion of the record paper shewing the double record of the entries printed or impressed upon the three cards aforesaid.

A indicates the printing or impressing members hereinafter referred to as discs, B the printing hammer or platen, C the record paper, D the inking ribbon and E the casing or the machine.

The discs A are rotatably mounted side by side upon a tubular shaft a which is fixed in proximity to an opening e formed in the top of the casing and through which opening portions of the discs protrude. These portions are formed with lettered or numbered holes or recesses a^1 (Figure 4) for the insertion of a style or key a^2 by means of which the discs can be moved through an arc that is determined by the width of the opening e. If desired projections may be substituted for the holes or recesses a^1. Each disc bears a duplicate set of letters or figures, one for the aforesaid holes or recesses and the other for effecting the printing or impressing operation. The last mentioned set of letters or figures projects from the peripheral portion a^3 of the disc which is situated in proximity to the printing hammer or platen B and when the style or key is inserted into one of the lettered or numbered holes or recesses a^1 and turned until it contacts with the edge e^1 of the opening e, a corresponding letter or figure or combination of letters or figures on the disc is brought into line with the printing hammer or platen. A third portion of the disc is formed with retaining notches a^4 for engagement with a spring controlled detent a^5 which retains the disc in its adjusted position until it is required to be reset. The letters or figures upon the discs are capable of producing the required data upon the card or time sheet, and various combinations can be produced. For example two sets of discs may be employed to indicate the job numbers, and the hours and minutes. Four discs are a convenient number to represent the job number and each of these discs bears duplicate sets of figures ranging from 0 to 9. The hour disc bears duplicate sets of numerals ranging from 0 to 12 and the minute disc bears duplicate sets of numerals, such as 0, 5, 10, 15 to 55, each disc being also provided with appropriate retaining notches for holding the disc in any desired adjusted position. If it is required to indicate every minute of the hour, two separate minute discs may be employed, one bearing numerals ranging from 0 to 6, and the other numerals ranging from 0 to 9. In another combination the discs may indicate the day the job was commenced, the job number, the time the job was taken off or completed and the new job number. In this combination the day disc would bear in duplicate the abbrevations, Mon., Tues., Wed. &c., and the job number and time discs would be marked in the manner above described, each disc being provided with suitable retaining notches. In the combination illustrated in Figure 4, the discs indicate the workman's number, the month, the date, the

job number, the time it was taken off and the new job number, the time of completion of one job being the time of commencement of the next job. The discs are conveniently identified as shewn in Figure 4, by means of engraved plates mounted on the portions of the casing which cross the discs.

The platen B which is constructed of indiarubber or other flexible material, extends across the discs and is arranged to be moved towards and away therefrom by the operator. For this purpose the platen is carried by an arm b that is pivoted at b^1 and is normally retained in its upper position by a spring b^2 connected with an arm b^3 that is arranged in rigid connection with the arm b and is adapted to be engaged by a cam b^4 that is keyed or otherwise fixed on a main operating shaft F which extends through an opening in the casing and is provided with a handle for manipulating purposes.

The strip C for producing the duplicate record is preferably manufactured from transparent paper and is carried by two spools, of which c may be termed the supply spool and c^1 the winding on spool. The latter carries a ratchet wheel c^2 that is engaged by a pawl c^3 pivoted upon an arm c^4. The latter is mounted upon a shaft c^5 which supports the spool and is provided with a roller c^6 situated in the path of the cam b^4 and retained in contact therewith by a spring c^7 acting on the arm c^4 with the result that an intermittent feed motion is imparted to the record paper for each revolution of the shaft F. The inking ribbon D passes underneath the record paper C and is carried by two spools d, d^1, any appropriate type of reversing mechanism being employed for causing the ribbon to travel from one spool to the other and *vice versa*.

Each of the discs employed for producing the workman's number, the job numbers, and the hours and minutes, is provided with a resetting pin G adapted to be engaged by a zero or resetting bar g which extends across the discs and is carried by a toothed sector g^1 rotatably mounted upon the tubular shaft a. This toothed sector gears with a toothed sector g^2 pivoted at g^3 and formed with an extension g^4 on which is mounted a roller g^5. The latter is situated in the path of a tappet g^6 that is mounted upon the shaft c^5 which carries the winding on spool and arranged in rigid connection with such tappet is a toothed wheel g^7 which is driven from the main operating shaft F and at half the speed of the latter through the intervention of the gear wheels g^8 and g^9.

At or about the time that the operating handle is approaching the completion of its operative movement a pin H on the sector g^2 forces a spring controlled detent h^1 into a recessed portion of a stepped cam h^2 on the main operating shaft F and prevents further movement of such shaft until one of the discs which controls the position of the zero or resetting bar g is moved.

To operate the machine the workman or other person first moves the discs by the aforesaid style or key into a position to cause the required data to be printed upon his card, any suitable positioning device being provided for determining the printing position of the card. This movement of the discs causes the zero or resetting bar to be moved from its upper position to its lowermost position, or to some intermediate position, with the result that the sectors g^1, g^2 are turned about their axes and the roller g^5 is brought into the path of the tappet g^6. The card is now inserted between the platen and the inking ribbon and a complete revolution is imparted to the operating handle. This movement turns the cam b^4 from the initial position indicated by the dotted lines, withdraws the platen or printing hammer to its maximum extent and completes the first feed motion of the record strip of paper. During the revolution of the operating handle, the stepped portion of the cam b^4 passes the roller c^6 and the spring c^7 returns the arm c^4 and pawl c^3 to a position for commencing the next feed movement of the record strip. The cam b^4 also passes the arm b^3 whereupon the spring b^2 suddenly returns the printing hammer or platen B into contact with the card, thereby forcing the latter together with the inking ribbon and record strip into contact with the raised letters or figures on the

discs with the result that the data is imprinted upon the card and upon the transparent strip of record paper. After the hammer or platen has completed its printing operation it is moved out of contact with the card by a recoil spring b^5.

The new card is now inserted between the platen and the inking ribbon and a second complete revolution is imparted to the operating handle. During this movement the record paper is again fed forward, the platen is actuated to effect the second printing operation, and the tappet g^6 is travelled past the roller g^5 on the sector g^2 thereby turning the latter together with the sector g^1 about their axes and returning the zero or resetting bar g and discs that are connected therewith to their zero or initial position. At or about the completion of the second revolution of the operating handle the pin H is brought over the locking pawl h^1 and forces the latter into a position to be engaged by the stepped portion of the locking cam h^2.

It will be seen that at each setting of the machine two impressions are made, one on the card of the job completed and the other on the card of the job about to be commenced, and these impressions are duplicated on the record strip. A complete card cannot be made out for a finished job until the number of the new job is ascertained, whereupon such number is marked upon the card appertaining to the finished job. The card relating to the new job bears the date and time on which the previous job was completed and the number thereof, the said time also being the time of commencement of the new job.

This will be clearly understood with reference to the three consecutive specimen job cards shewn in Figures 5, 6 and 7. The card shewn in Figure 5, shows that job No. 146 was commenced at 10-55 on March 1st. and finished at 10-15, on March 3rd. which represents the time of commencement of the new job No. 168. As soon as the workman received the card shewn in Figure 6, which bears the new job No. 168, he set the discs to produce the data indicated on the bottom line of the card shewn in Figure 5. He then inserted such card into the machine and rotated the operating handle once thereby imprinting the data upon the card and also upon the record strip as indicated by the second entry thereon. He now took the card shewn in Figure 6, and repeated the operation, imprinting the data upon the first line of the card and duplicating it upon the record strip as seen with reference the third entry thereon.

At 8-45, on March 5th., he completed job No. 168, and received the card shewn in Figure 7, bearing the new job number No. 190, whereupon he made the second entry on the card shewn in Figure 6, and duplicated such entry on the card shewn in Figure 7, the duplicate entries being also recorded on the record strip as seen with reference to entries four and five thereon.

By duplicating the entries on consecutive cards a double entry is produced upon the record strip and a glance at the job number columns at once shews whether any job number is missing.

In adapting the machine for use in connection with time sheets, the printing hammer or platen B advantageously comprises an indiarubber or other flexible roller (Figure 3) mounted in spring bearings b^6 connected with the underside of a rising and falling table b^7. In the example shewn this table is hinged at b^8 and is provided with an arm b^9 connected by a link b^{10} with a crank pin b^{11} projecting from a disc b^{12} that is rigidly secured upon the end of the main operating shaft F. The action of the platen is practically identical with that already described for use in connection with cards, with the exception that the impression is made by the squeezing action of the platen instead of by its sudden impact.

In a modified construction of machine, operating levers may be substituted for the aforesaid discs. Each of these levers may terminate in a sector provided with letters and numerals for effecting the printing or impressing operation and working in conjunction with a stop for determining the movement of

the levers. In an alternative arrangement the latter may be geared to discs similar to those already described. If desired the discs or levers bearing the time indications may be operated from a time clock, but this is not absolutely necessary owing to the fact that any preceding or succeeding entry is not open to inspection by the operative, consequently unless the latter records correct time his false entry is liable to be discovered when compared with the preceding and succeeding entries.

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

1. A workman's time recorder in which the job number, the time of change of the job and the number of the new job are mechanically printed upon cards, or upon time sheets and a duplicate record thereof is simultaneously produced upon a record strip and retained within the apparatus until required for office use.

2. A workman's time recorder having its parts constructed, arranged and adapted to operate substantially as hereinbefore described with reference to the accompanying drawings for the purpose specified.

Dated this 9th. day of March, 1912.

BRIERLEY & APPLEYARD,
Halifax and Blackburn,
Agents for the Applicant.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1912.

FIG. 1.

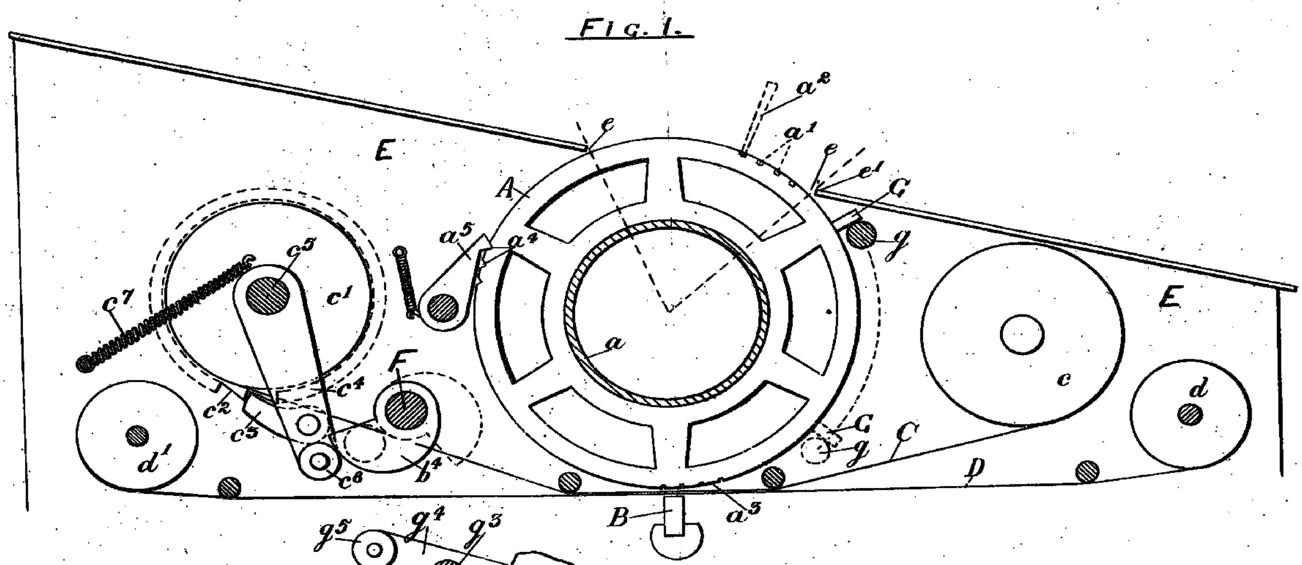

FIG. 2.

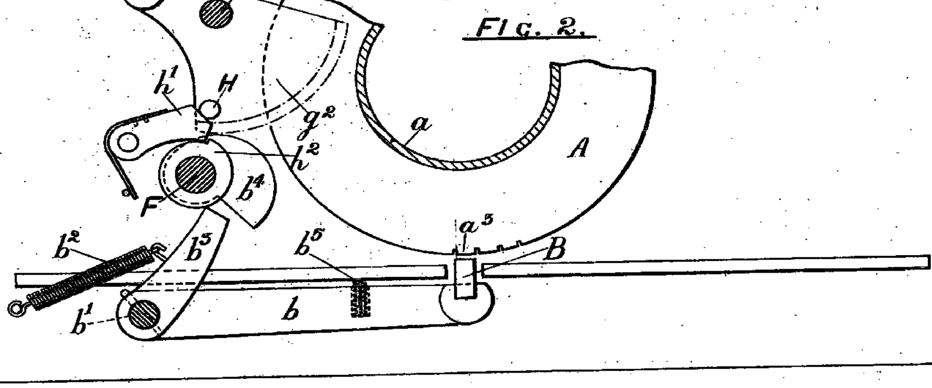

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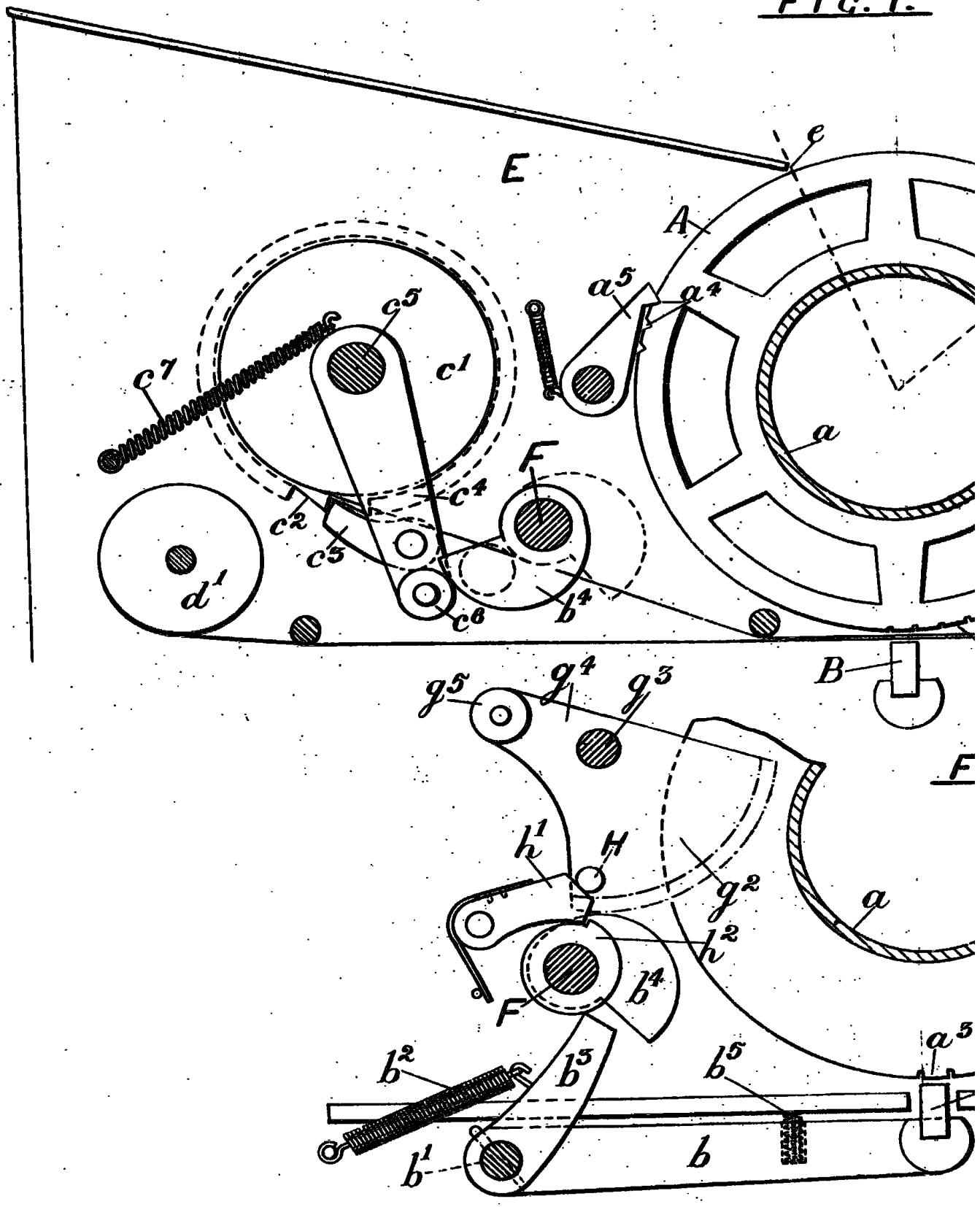
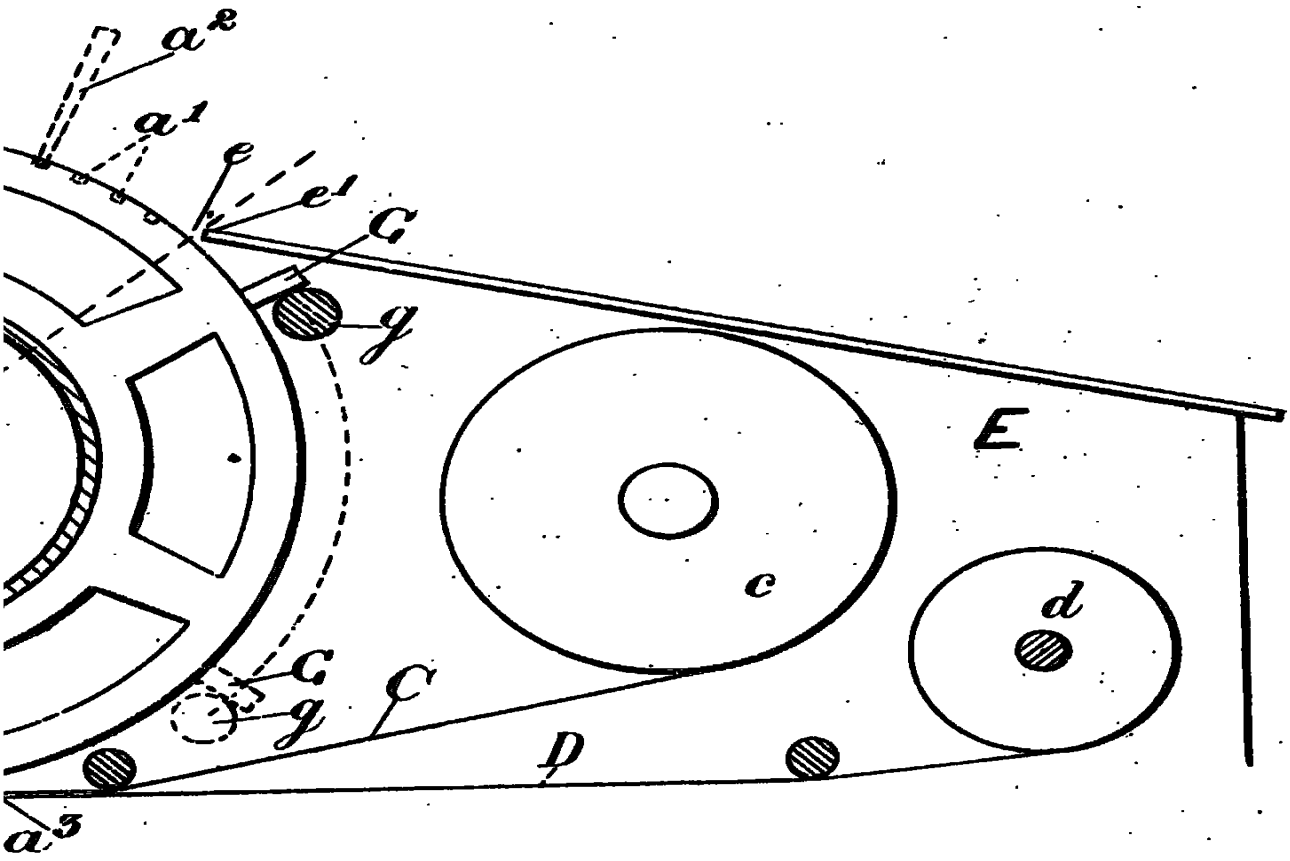
FIG. 1.





IG. 2.

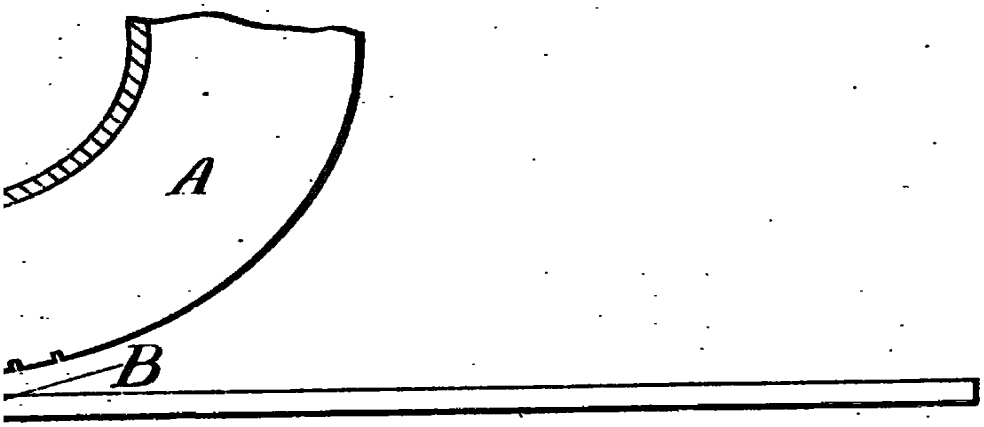


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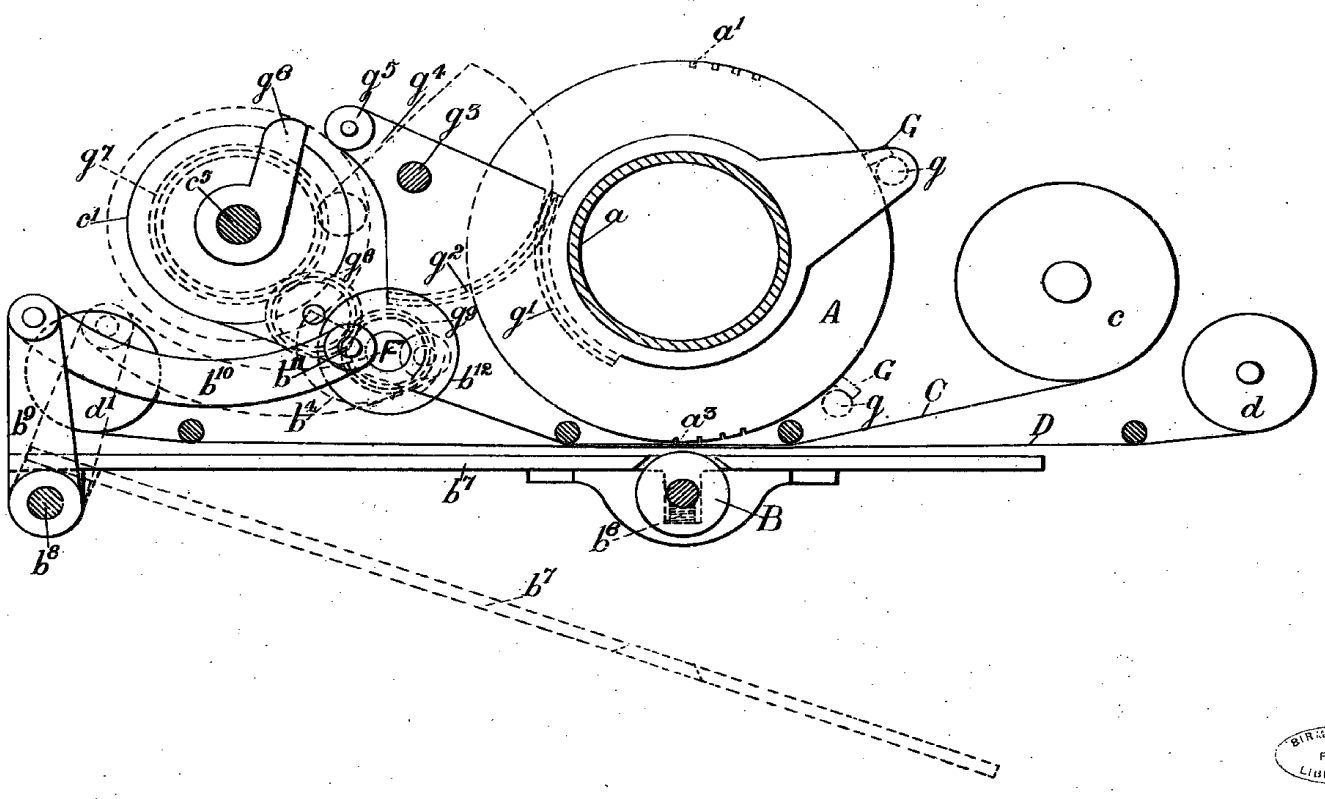
FIG. 3.



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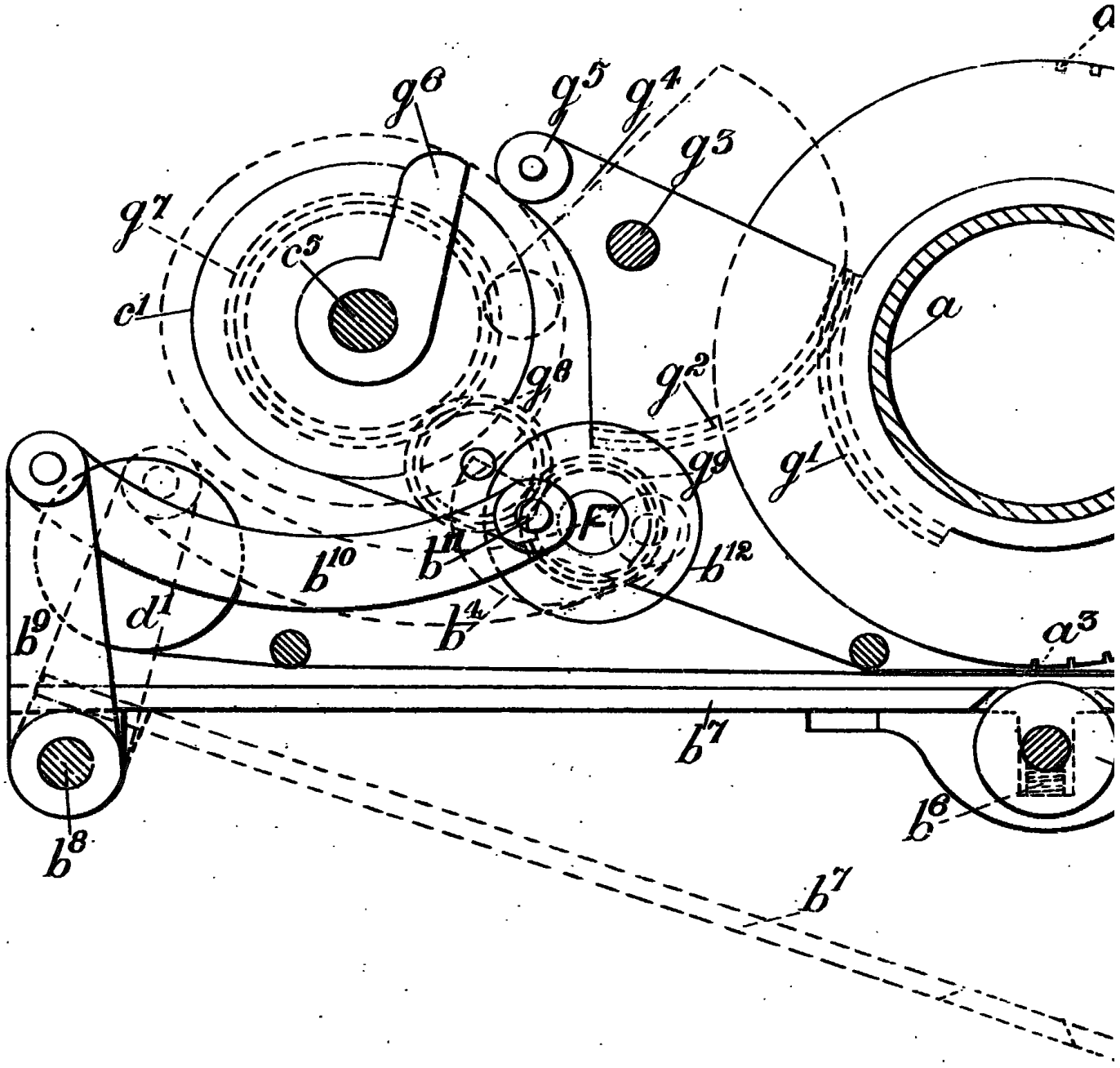
[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 3.



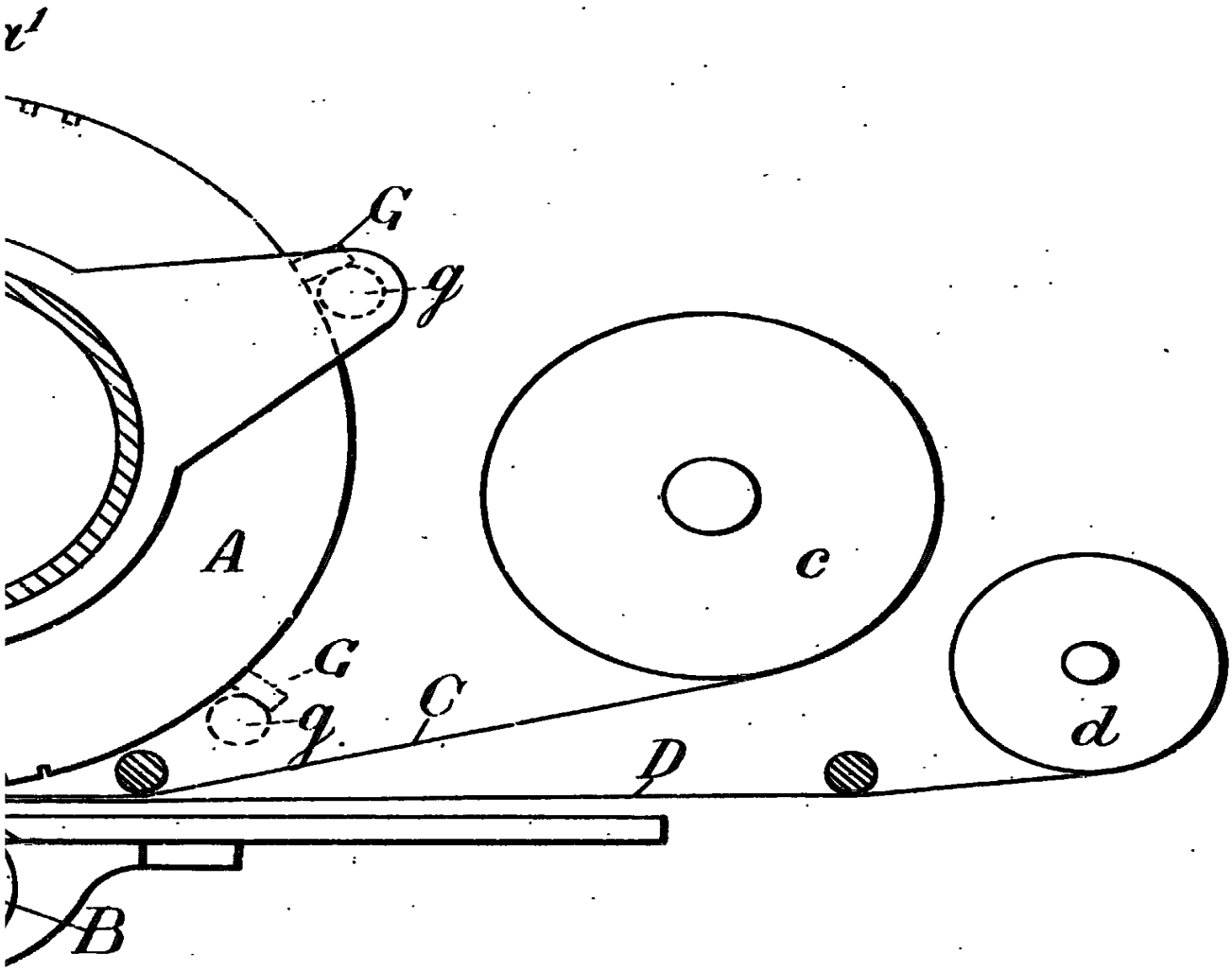


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Fig. 4.

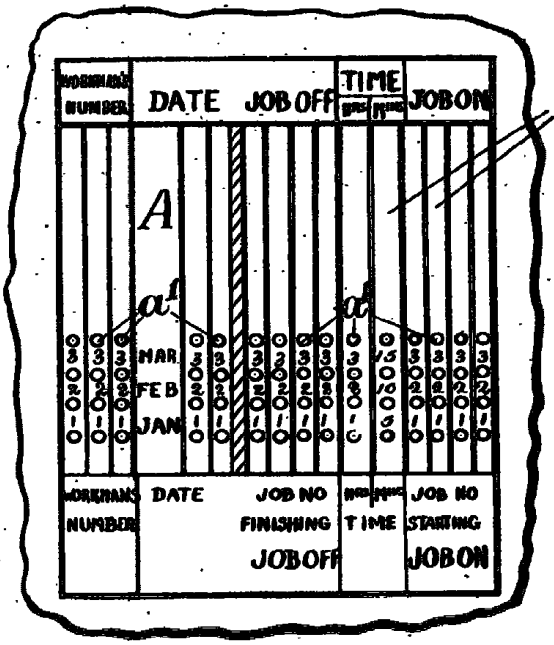

Fig. 5.

JOB	Boring & Turning 12 Pulleys			Nº	146
126	MAR.01	0125	10	55	0146
126	MAR.03	0146	10	15	0168

Fig. 6.

JOB	Grinding 48 Shafts			Nº	168.
126	MAR.03	0146	10	15	0168
126	MAR.05	0168	8	45	0190

Fig. 7.

JOB	Assembling 6 Frames.			Nº	190
126	MAR.05	0168	8	45	0190
126	MAR.07	0190	3	15	1164

Fig. 8.

126	MAR.01	0125	10	55	0146
126	MAR.03	0146	10	15	0168
126	MAR.03	0146	10	15	0168
126	MAR.05	0168	8	45	0190
126	MAR.05	0168	8	45	0190
126	MAR.07	0190	3	15	1164

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