

No. 741,907

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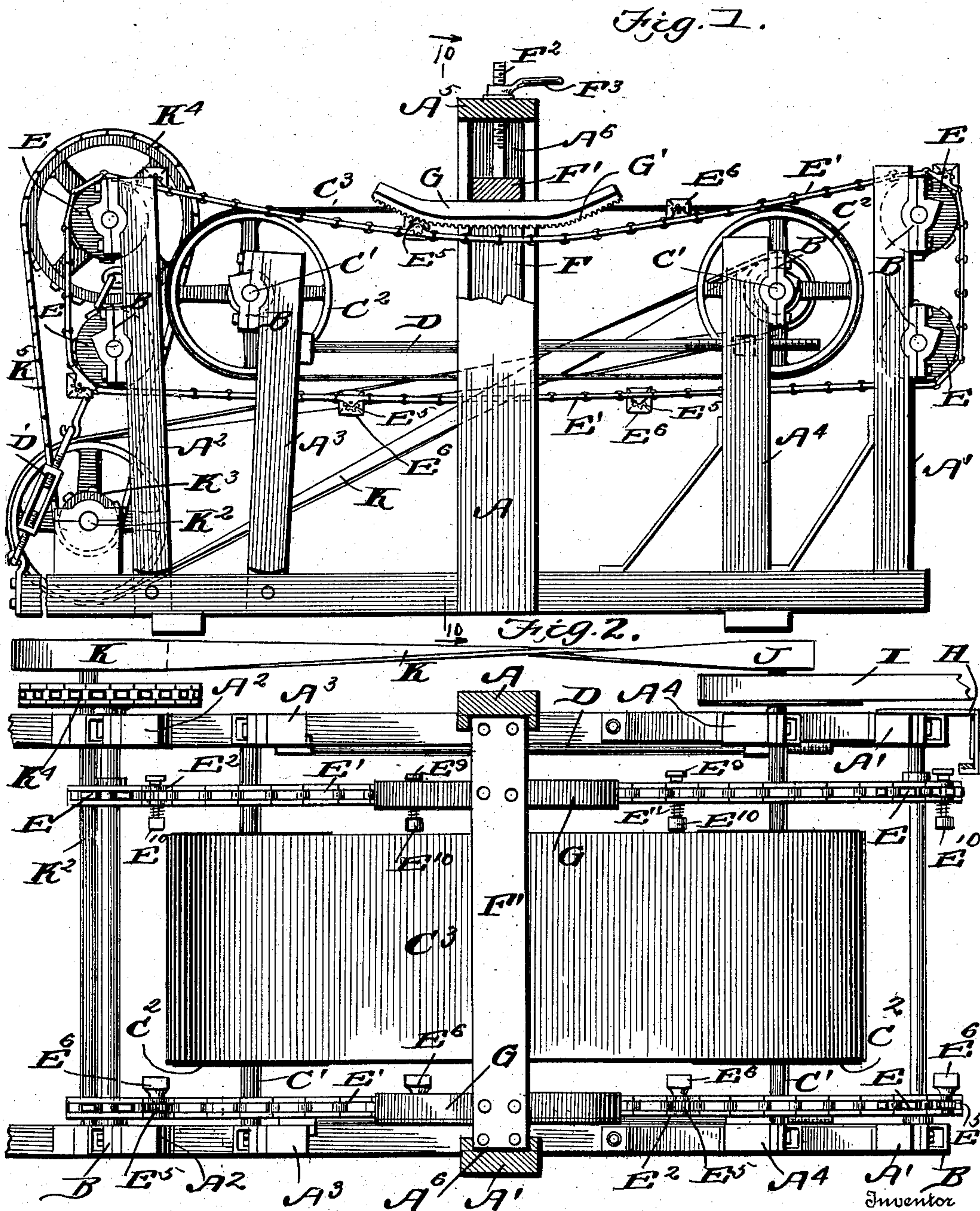
A. H. HATFIELD.

AUTOMATIC GRINDING OR POLISHING MACHINE.

APPLICATION FILED JAN. 10, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 3

Fig. 70

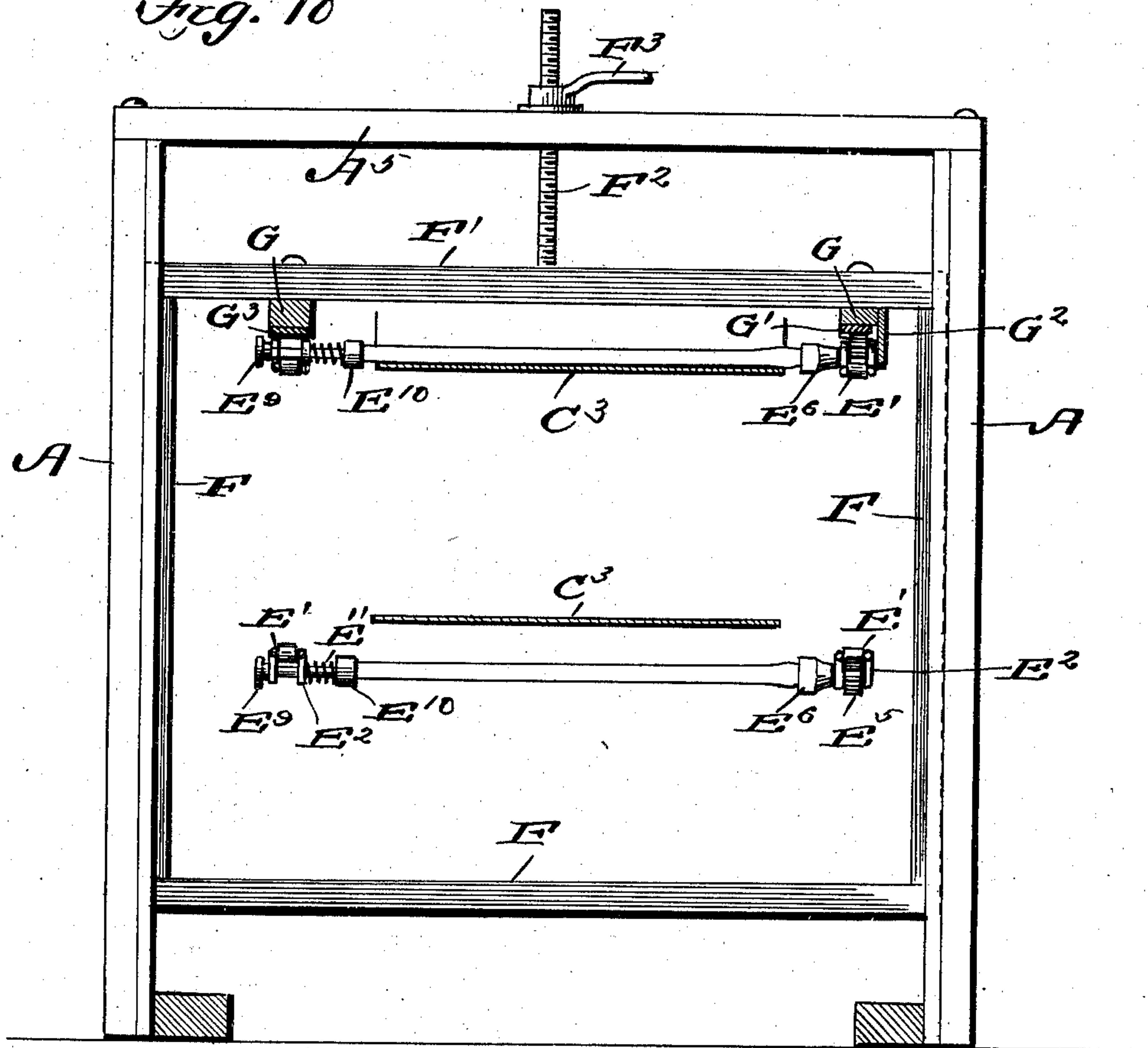


Fig. 77.

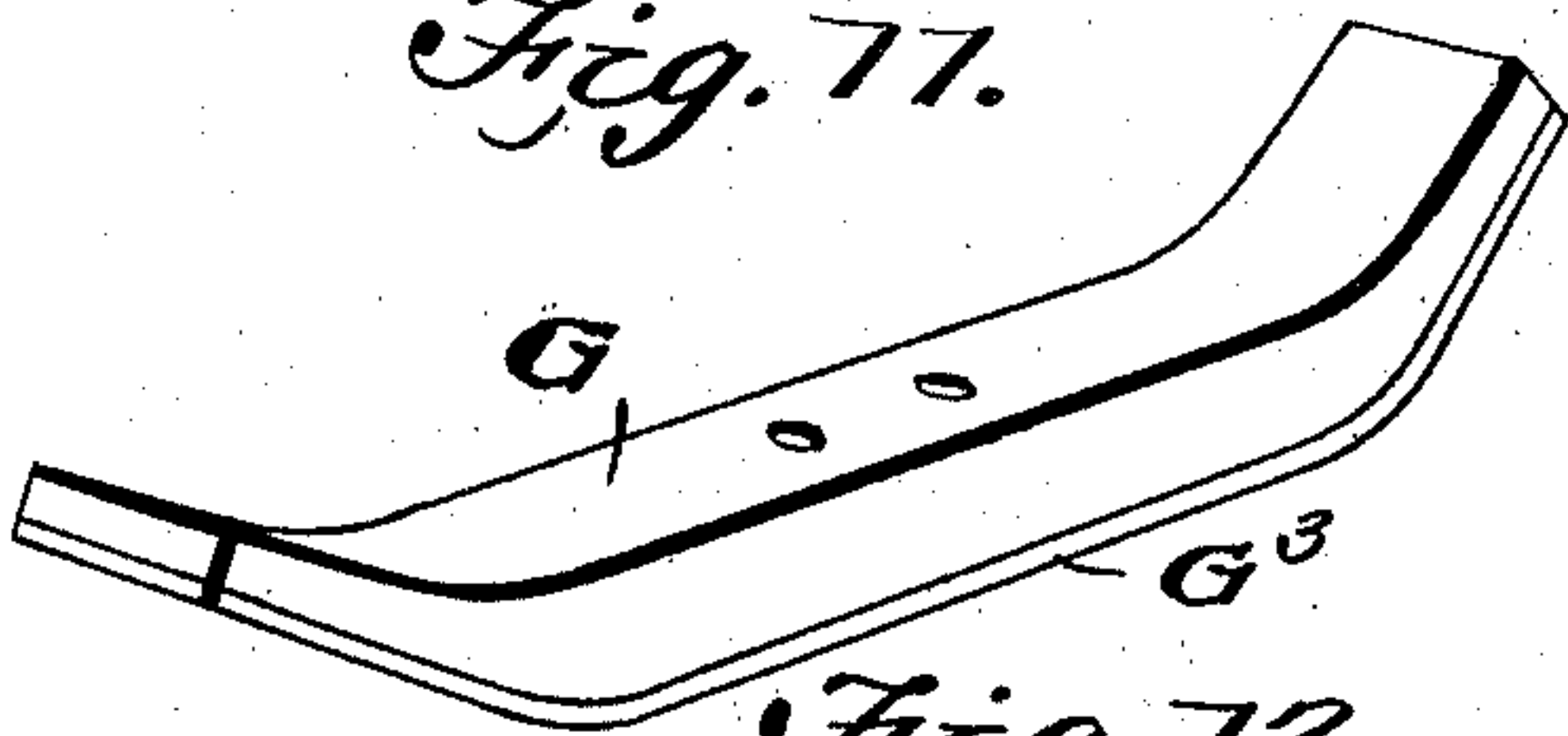


Fig. 73.

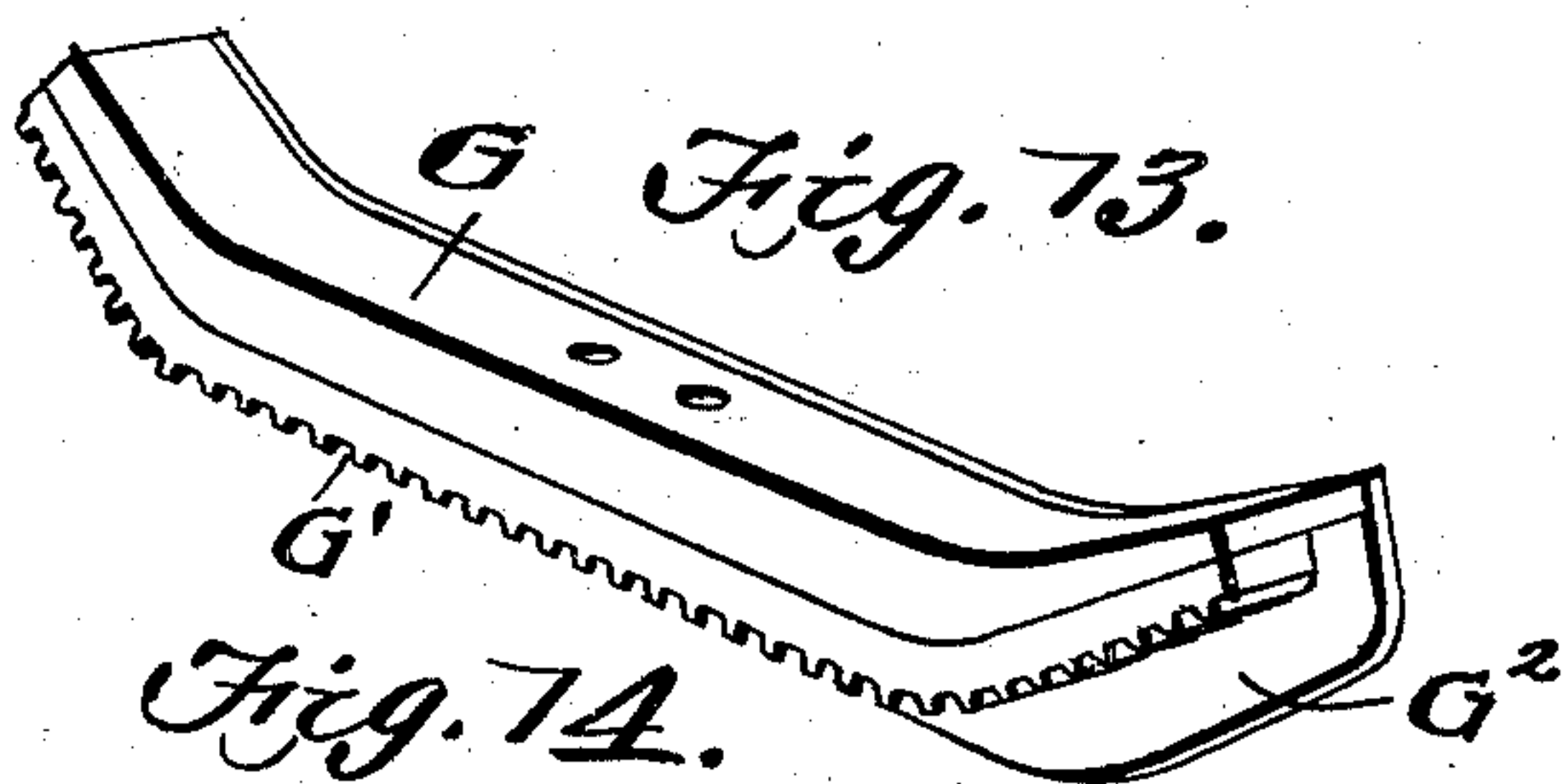
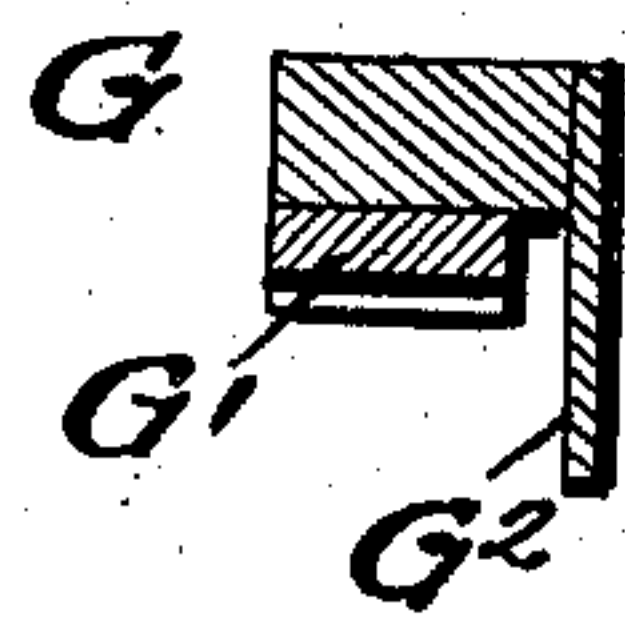


Fig. 74.



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UNITED STATES PATENT OFFICE.

ALBERT H. HATFIELD, OF BROCKPORT, NEW YORK.

AUTOMATIC GRINDING OR POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 741,907, dated October 20, 1903.

Application filed January 10, 1903. Serial No. 138,577. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. HATFIELD, a citizen of the United States, residing at Brockport, in the county of Monroe and State of New York, have invented a new and useful Automatic Grinding or Polishing Machine, of which the following is a specification.

My invention relates to an improvement in automatic grinding and polishing machines, and more especially to a machine of this class adapted for polishing carriage and wagon spokes, maul and ax handles, and similar articles.

The main object of the invention is to provide a device of this character which will automatically hold the spoke or handle to the grinding or polishing surface, revolve the article being acted on, lift it from the polishing-surface, automatically releasing and depositing it at the front of the machine.

In the accompanying drawings, Figure 1 is a side elevation of my improvement, parts thereof being broken away and others shown in section to more clearly illustrate my improvement. Fig. 2 is a plan view with the top cross-beam removed and the guiding-standards shown in section. Fig. 3 is an enlarged detail end view of the feed end of the machine. Figs. 4 and 5 are detail views illustrating the holder by which one end of the article being polished is held and revolved. Figs. 6 and 7 are similar views of the holder for retaining the opposite end of the article. Fig. 8 is a detailed view of one of the links in which either holder is held. Fig. 9 is a detail perspective view illustrating the device for automatically releasing the article polished and also for withdrawing the holder to the position for permitting the insertion of another article. Fig. 10 is an enlarged detail section on or about the line 10 10 of Fig. 1. Figs. 11 and 12 are detail views illustrating one of the shoes under which the chain travels, and Figs. 13 and 14 are similar views of the guiding-shoe that is employed for operating the revolving holder.

In carrying out my invention I employ a suitable frame comprising vertical standards A midway the ends of the frame, rigid vertical standards A' at the front end of the machine, and it may be stated here that when a spoke is inserted into the machine it is car-

ried around over the polishing-belt and returned and released at the front end, and therefore the release or discharge end is the same as the feed end and is herein termed the "front" end. At the rear end are pivoted standards A², and adjacent these standards are shorter standards A³, also pivoted. Adjacent the front end are standards A⁴, rigid with the base. To these various standards are secured bearings B. (Shown fully in Fig. 9 and require no detail description.)

In the bearings attached to the standards A³ A⁴ are shafts C', carrying belt-pulleys C², over which runs a sand-belt C³ of the usual construction. Secured to these standards A³ A⁴, working in suitable blocks attached to the standards, are the rods D, threaded at one end and revoluble. By turning the rods the standards A³ are inclined toward or away from the standards A⁴, thus loosening or tightening the sand-belt.

To each standard A' A² are mounted in the bearing B two sprocket-wheels E, one above the other, and sprocket-chains E' run around these wheels, a chain being on each side of the frame.

To each of the standards A² is connected through the medium of a link a turnbuckle D', the buckle being connected at its lower end to a link secured to the base. By means of this buckle the standards A² can be inclined, tightening or loosening the sprocket-chains.

A cross-piece A⁵ connects the upper ends of the standards A, and the standards are longitudinally recessed on their inner faces, as shown at A⁶ in Figs. 1 and 2. The side members of a vertical frame F (shown complete in Fig. 10) slide in these recesses, while the upper cross-piece F' of the frame has rigidly secured to its under face shoes G, described in detail hereinafter. The cross-piece A⁵ has a central threaded perforation in which works a threaded rod F², the lower end of which is secured to the cross-piece F'. By turning the hand-nut F² the frame F is drawn toward or forced away from the cross-piece A⁵, thus raising or lowering the frame F.

In the sprocket-chains are secured links having perforated ears E², Fig. 8, and revolvably journaled in these ears are short shafts E⁴. In practice I place these ear-bearing

links at about every tenth link in the sprocket-chain, they being directly opposite each other in the two chains. On one side of the machine the shafts carry pinions E^5 , arranged
 5 between the ears, and the inner end of the shaft projects inside the chain and carries a rectangular holder or cap E^6 , having a socket E^7 opening toward the opposite chain. On the other side of the machine the shaft E^8 is
 10 longer than the shaft E^4 and carries no pinion. On its outer end a cap-piece E^9 is threaded on it and at its end it carries a hollow cylindrical cap E^{10} , opening toward the socket E^7 and in alinement with it. A coiled spring
 15 E^{11} bears at one end against the rear of the cap E^{10} and at the opposite end against the inner ear of the link.

The shoes G are positioned parallel to and directly above the chains E' , the shoes having a straight central portion and upturned
 20 ends and are bolted or secured in any desired manner to the piece F' . These shoes differ slightly from each other, the shoe above the chain carrying the pinions having rack-teeth
 25 G' formed along its under surface and a flange G^2 on the outer side. The opposite shoe has no flange and a smooth wearing under surface G^3 .

The spoke or handle to be polished is held
 30 at one end in the cap E^{10} and at the opposite end in the socket E^7 and is of course carried around with the chain. As it passes between the shoes and the belt it is not only held firmly down, but the pinion E^5 , engaging the
 35 rack-teeth G' , will be rapidly revolved, turning the spoke or handle. It is understood that the belt is also moving. To the outside of one of the standards A' is secured an angled bracket H , having its shorter inwardly-
 40 projecting arm longitudinally slotted, and over this arm fits an angled arm H' , slotted also, and the two brackets are adjustably held together by the usual bolt passing through the slots and secured by a nut. The
 45 brackets are between the two bearings B carried by this standard and on the side of the chain carrying the caps E^9 E^{10} , and the bracket H' carries at its inner end a curved and downwardly and inwardly inclined plate
 50 H^3 , the curved edge of the plate being toward and slanting away from the under chain. As the chain revolves, passing over the sand-belt, under the shoes, and back beneath the
 55 belt to the front of the machine, the holders and spokes or handles are carried with them and as the links having the shafts E^8 pass the lower part of the plate H^3 the cap E^9 engages the face of the plate outside the chain, and as the plate is curved to conform to the
 60 curvature of the chain and also slants away from the chain it acts as a guide-plate and draws the holder, of which the cap E^9 is a part, out away from the cap E^6 and the spoke falls out. Another one is inserted in its
 65 place, and when the cap reaches the end of the guide-plate the tension of the spring E^{11} draws it back into place, and the new spoke

is held firmly in the same manner as the one dropped.

The forward shaft C' carries a driven pulley I and a driving-pulley J , from which runs
 70 a belt K to a pulley K' , mounted on a shaft K^2 , journaled in suitable bearings in the rear of the frame, and on this shaft is a sprocket K^3 , and above it on one of the shafts carry-
 75 ing the sprocket-wheels E is a sprocket-wheel K^4 , driven by a chain K^5 from the wheel K^3 .

From the above it is evident that any one skilled in the art will understand the construction and operation of my improved ma-
 80 chine.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A spoke-polishing machine comprising
 85 a polishing-surface, holders adapted to travel above the polishing-surface and to receive the ends of spokes, means for automatically releasing the spokes from the holders after
 90 passing the polishing-surface, and means for holding the spokes down on the polishing-surface and rotating the spoke while in contact with the polishing-surface.

2. In a polishing-machine, the combination
 95 with a polishing-surface, link chains traveling on each side of said surface, said chains comprising links having perforated ears, shafts mounted therein, cap-pieces carried by the inner ends of said shafts and adapted to
 100 receive the ends of spokes, means for holding said spokes against polishing-surface and rotating same while in contact with the said surface, and means for automatically releasing the spokes from the holder after passing
 105 over the polishing-surface.

3. In a device of the kind described, a sprocket-chain comprising links having perforated ears, shafts revolubly journaled in
 110 said ears, pinions on said shafts, caps having sockets on the inner ends of the shafts, a parallel chain having links with perforated ears, revoluble shafts journaled therein, hollow inwardly-open caps on the inner ends of the
 115 shafts, springs between the caps and the ears, flanged caps on the outer side of the last-mentioned shafts, shoes adapted to bear down on the chains, rack-teeth on one of said shoes adapted to engage the pinions carried by the
 120 shafts, and an inclined guideway adapted to engage the flanged caps and draw the hollow open caps away from the caps carried by the pinion-bearing shafts, substantially as described.

4. A device of the kind described comprising
 125 a suitable frame, a sand-belt mounted therein, sprocket-chains traveling on either side of the sand-belt, shafts carrying holders at their inner ends journaled in the links of
 130 said chains, pinions mounted on the shafts carried by one of the chains, a vertically-adjustable frame inclosing said belt and chains, shoes carried by the frame, one of said shoes having teeth on its under surface adapted to engage the pinions and rotate the holders, and

means at the forward end of the frame for drawing the holders of one chain away from the holders of the other chain.

5 In a machine of the kind described, a polishing-belt, endless chains adapted to carry spokes traveling on each side of and slightly above said belt, and vertically-adjustable

shoes arranged above the chains and adapted to regulate the pressure of the spoke against the belt.

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