No. 677,808. Patented July 2, 1901.

A. SHARP.

IRONING MACHINE.

(Application filed Mar. 3, 1899.)

(No Model.) 5 Sheets—Sheet 1.

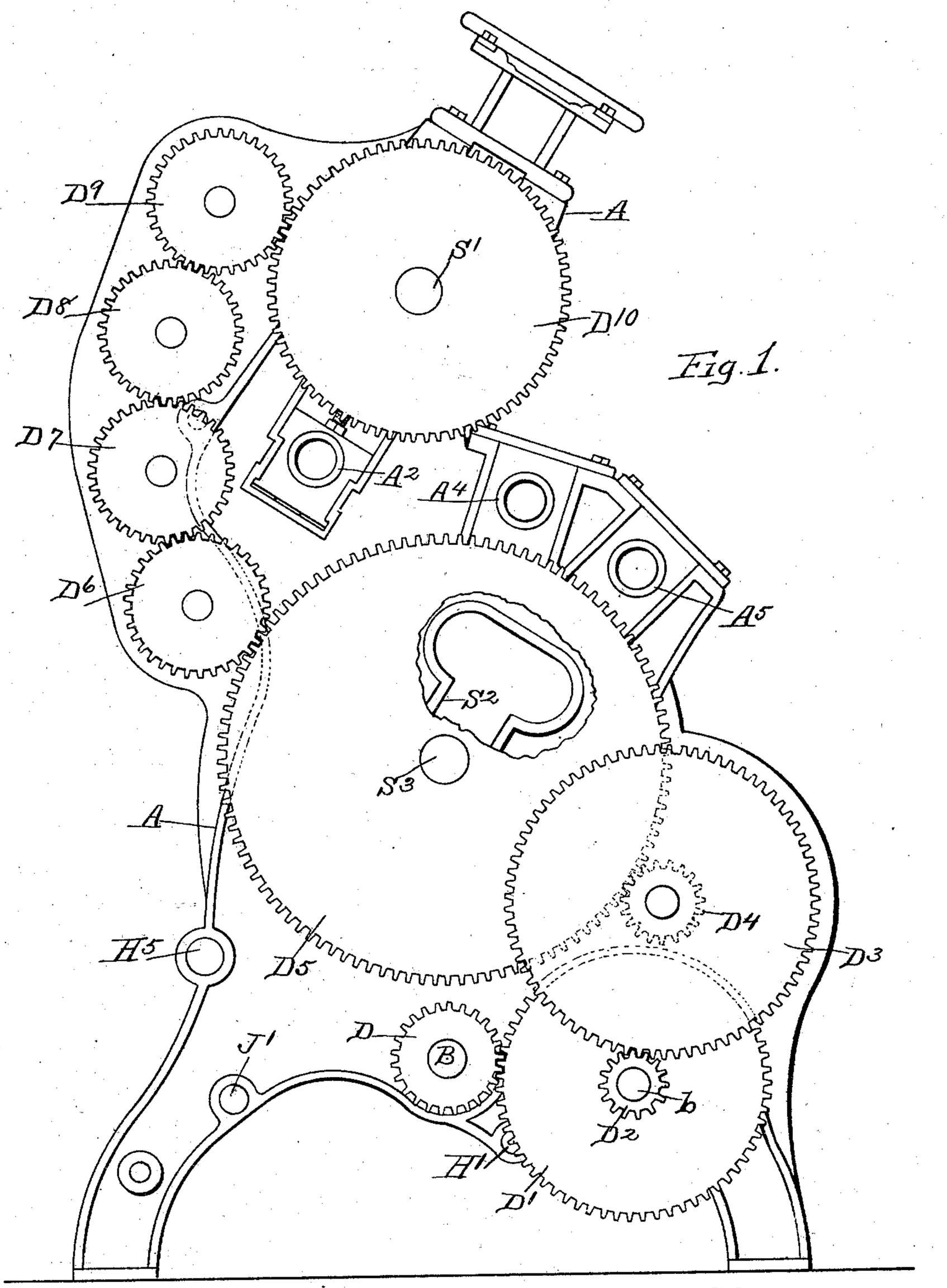

Fig. 1.

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G. H. Curtis

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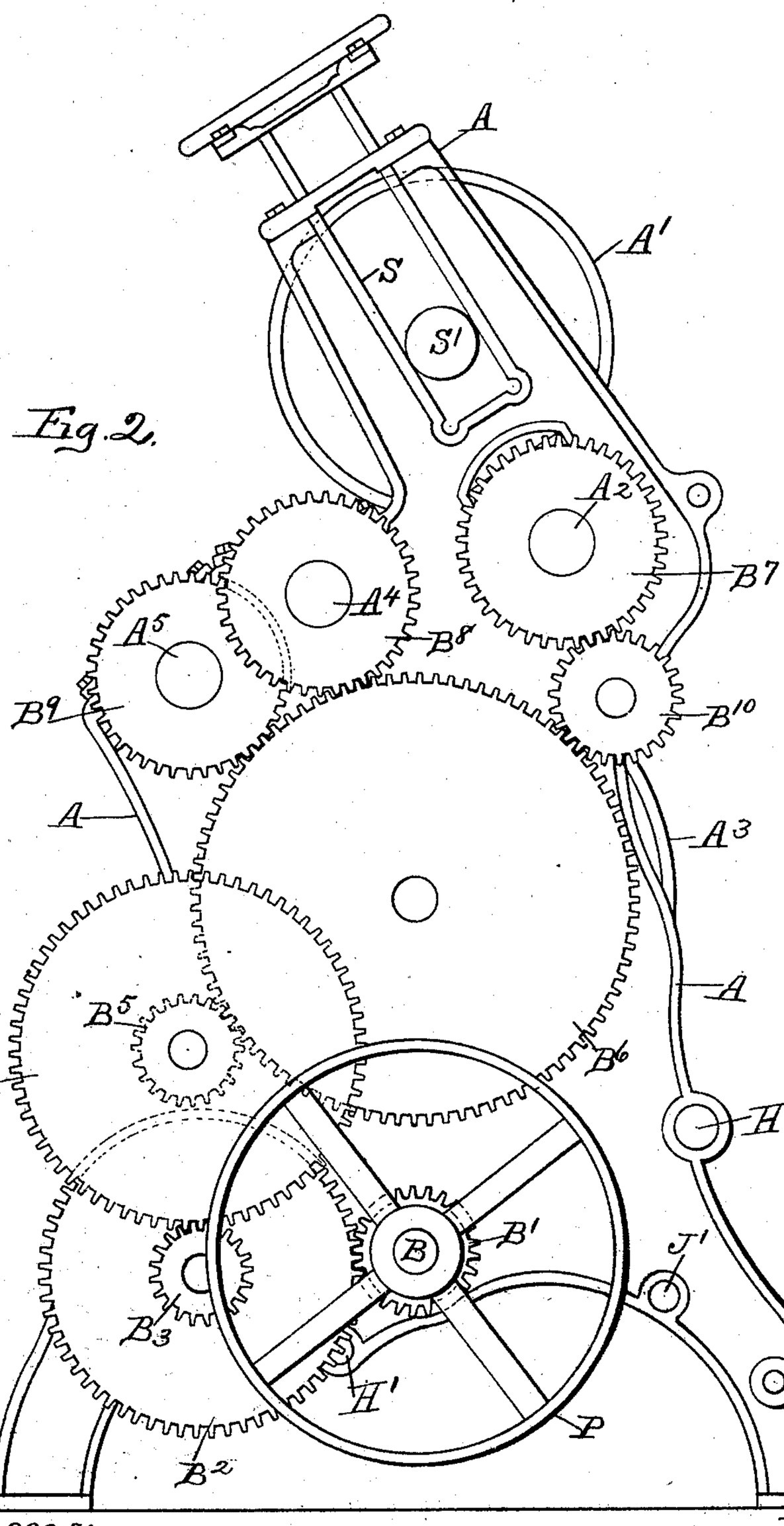
(No Model.) 5 Sheets—Sheet 2.

Fig. 2.



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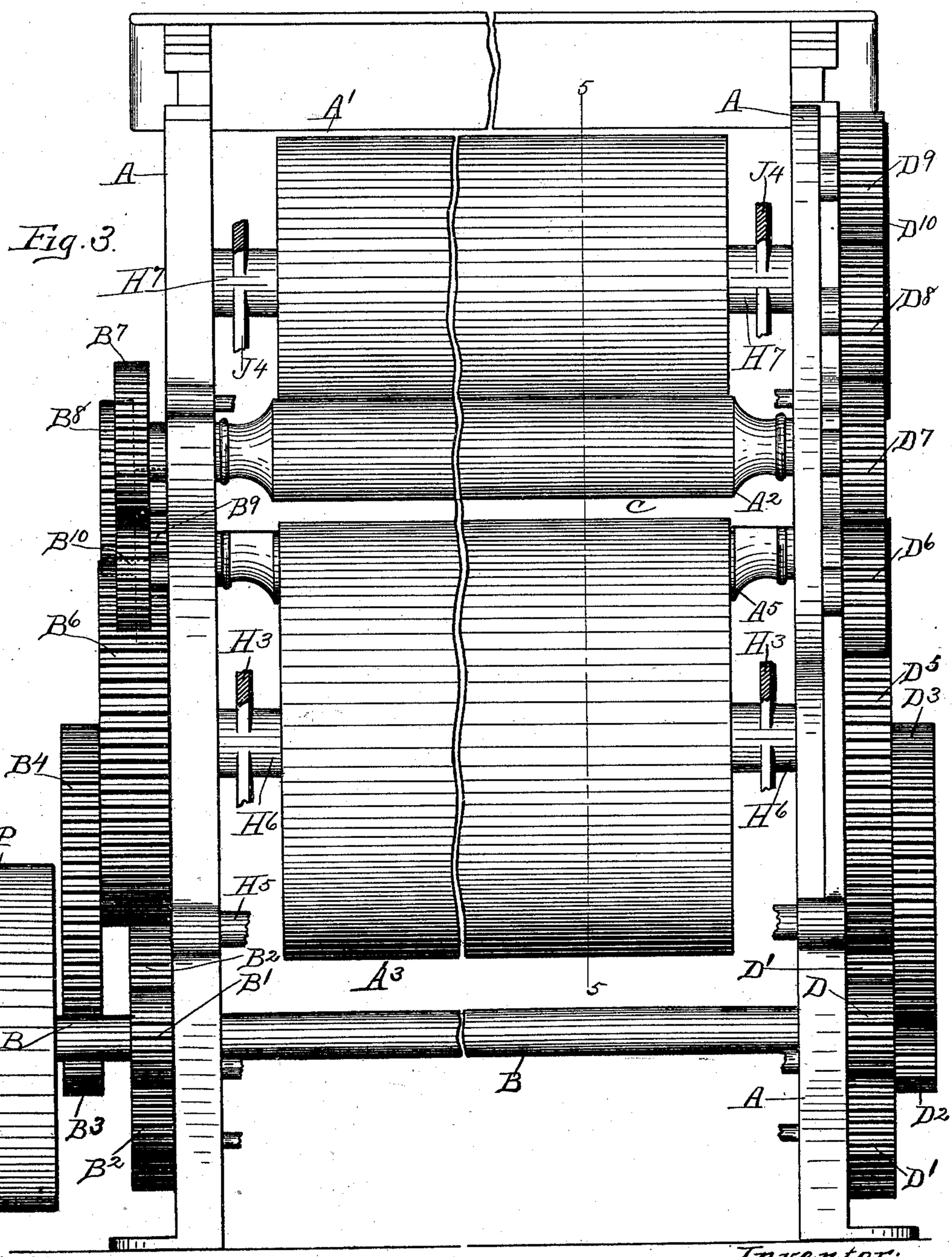
(No Model.) 5 Sheets—Sheet 3.

Fig. 3.



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(Application filed Mar. 3, 1899.)

(No Model.) 5 Sheets—Sheet 4.

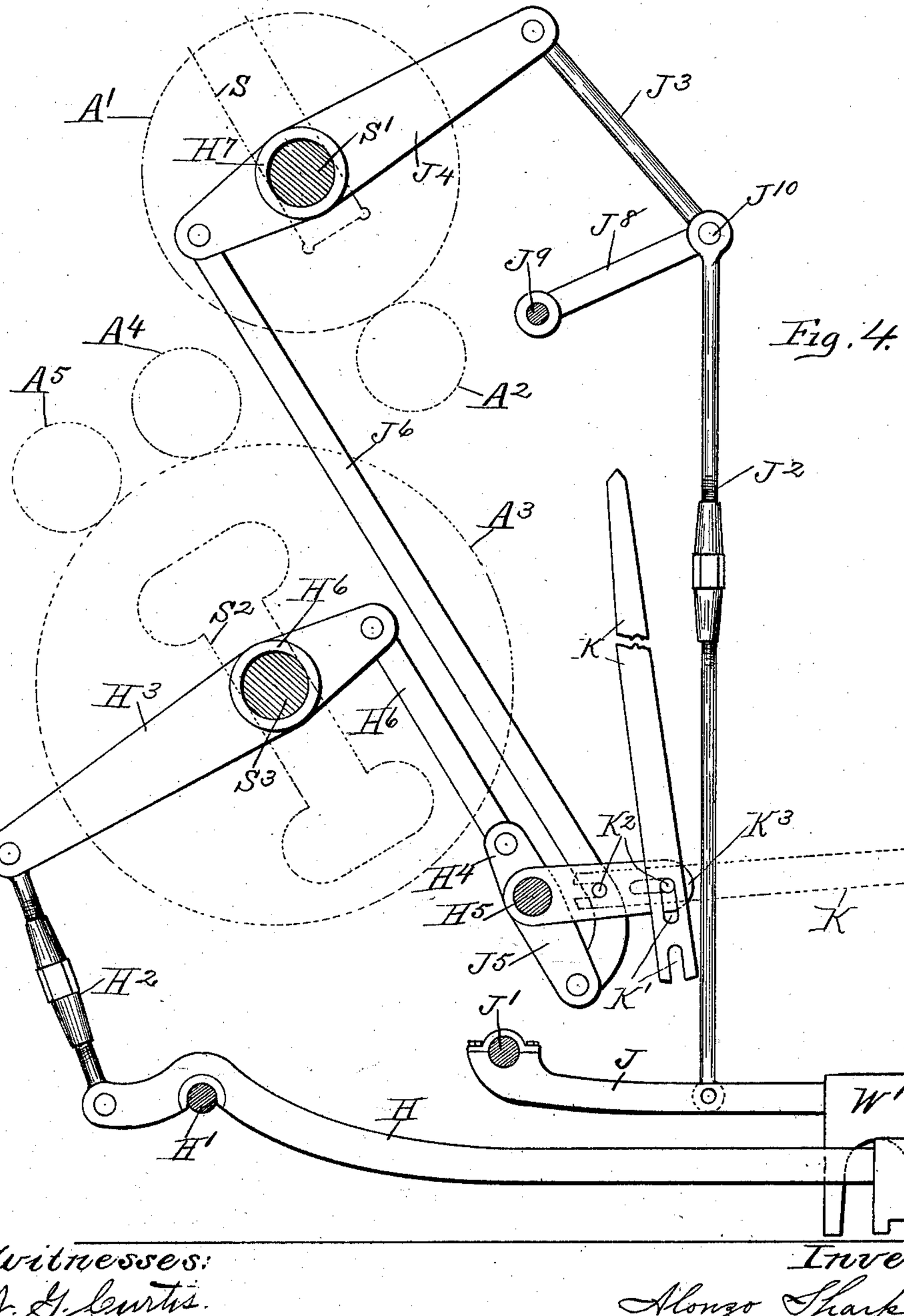

Fig. 4.

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No. 677,808. Patented July 2, 1901.

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(Application filed Mar. 3, 1899.)

(No Model.) 5 Sheets—Sheet 5.

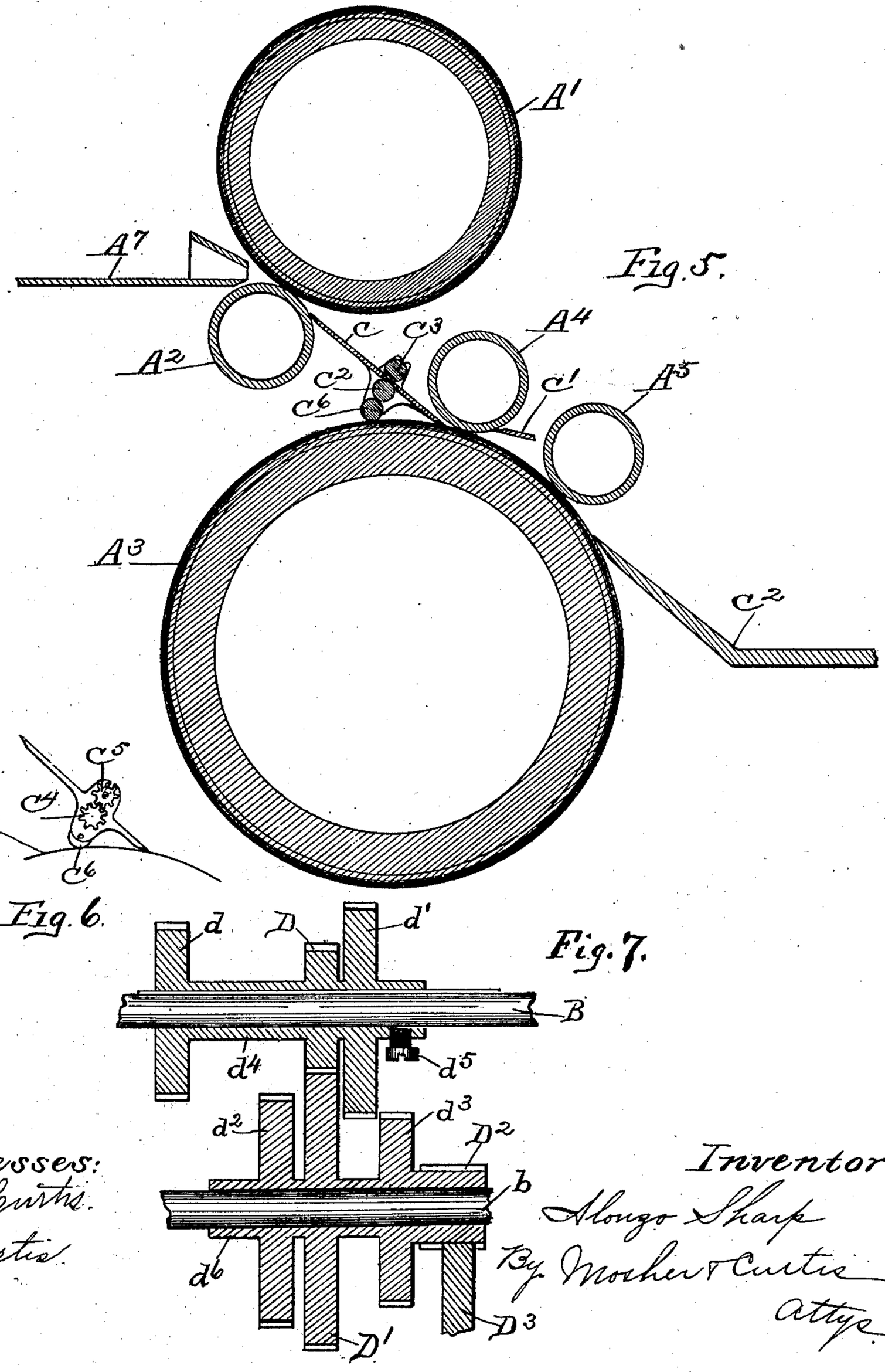

Fig. 5.

Fig. 6.

Fig. 7.

Witnesses:
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UNITED STATES PATENT OFFICE.

ALONZO SHARP, OF TROY, NEW YORK, ASSIGNOR TO THE ADAMS LAUNDRY MACHINERY COMPANY, OF SAME PLACE.

IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 677,808, dated July 2, 1901.

Application filed March 3, 1899. Serial No. 707,584. (No model.)

To all whom it may concern:

Be it known that I, ALONZO SHARP, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Ironing-Machines, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

Figure 1 of the drawings is an elevation of one end of the improved ironing-machine. Fig. 2 is a similar view of the opposite end. Fig. 3 is a front elevation of the main frame, showing some of the rollers and gear connections. Fig. 4 is a vertical cross-sectional view showing the movable roller-shafts and actuating-levers, not fully shown in the other figures. Fig. 5 is a vertical cross-section taken on the broken line 5 5 in Fig. 3, showing the rollers and feed-tables. Fig. 6 is a detail view showing intermeshing pinions on the small feed-rolls. Fig. 7 is a sectional view of the change-gear for the clothed rolls.

This invention relates to that class of ironing-machines in which the dampened goods are partially dried and ironed on one side by being passed between two rollers and subjected to heat from the under roller and to comparatively light pressure from the rollers and are then carried to another set of rollers, having the polishing-roller uppermost, where the goods are subjected to heat from the polishing-roll and comparatively great roller-pressure.

The object of the invention is to produce a more compact and efficient machine.

A is the main frame of the machine, which supports in suitable bearings the upper set of ironing-rollers A' and A^2 and the lower set of rollers A^3, A^4, and A^5. The rollers A' and A^3 are relatively large and clothed, while the rollers A^2, A^4, and A^5 are relatively small and unclothed and may be termed "polishing-rollers" and which are provided with the usual means for heating. (Not shown.) The rollers are caused to rotate by gear connections with the driving-shaft B. The gear connections for the polishing-rollers are shown in Fig. 2, wherein the reducing-gears B', B^2, B^3, B^4, and B^5 connect the driving-shaft with the large gear-wheel B^6, these gears, except B', all being rotary upon studs projecting from the main frame, as shown. The gear B' is fixed upon the drive-shaft, which is provided with the drive-pulley P. The stud-supported intermediate gear B^{10} connects the large gear B^6 with a gear B^7, fixed on the roller A^2. The gears B^8 and B^9 are fixed on the rollers A^4 and A^5, respectively, and mesh with the large gear B^6.

It should be observed that the toothed face of the large gear B^6 is made wider than that of the other gears, so that the gears B^8 and B^9, both meshing therewith, can lap each other, as shown in Fig. 2. Such a construction permits the polishing-rolls A^4 and A^5 to be brought near enough together to cause the goods, such as detachable collars and cuffs, to feed steadily past both rollers and the larger roller A^3.

A collar or cuff being fed from a table A^7 in between the rollers A' and A^2 passes down the inclined way C, Fig. 5, to the rollers A^3 and A^4 and thence to the roller A^5, being stripped from the roller A^2 by the knife-edge on the upper end of the inclined way and from the roller A^4 by a stationary stripper C'. After passing the last roller A^5 it is delivered upon the receiving-table C^2.

By placing the clothed rollers in practically the same vertical plane, as shown, it is possible to make the machine narrower and more compact and to dispense with a traveling carrier to carry the goods from one set of rollers to another set, gravity being sufficient in most cases to carry the goods from one set of rollers to the other down the inclined way C.

When desired, a set of small feed-rolls may be employed to insure a positive delivery—as, for example, the rolls C^2 and C^3, respectively provided on one end with intermeshing pinions C^4 and C^5, Fig. 6.

The friction-roll C^6 is actuated by the roller A^3, with which it engages, and itself engages and actuates the roll C^2, thereby positively

imparting to the small feed-rolls a surface speed identical with that of the clothed rollers.

When only one polishing-roller, as A^4, was employed in the second set, which set polishes the right side of the goods, it frequently happened that the polish was insufficient and imperfect, necessitating the presence of an attendant at the receiving-table C^2 to constantly inspect the work and pass the imperfectly-polished goods through the last set of rollers a second time while the goods yet retained a degree of dampness.

The improved construction above described, which permits the use of two polishing-rolls A^4 and A^5 in the last or finishing set, not only obviates the necessity of watching the product and passing some of it through the finishing-rollers a second time, but improves the whole product.

The polishing-rolls being maintained in a heated condition would injure the clothed rollers if left in contact therewith while the machine was at rest, and the journals of the clothed rollers are provided with movable bearings and means for moving them, so that the rollers are separated when the machine is stopped, and with means for varying the pressure for different kinds of goods when the machine is at work. The means for so moving the bearings consists of a system of weighted levers which do not differ materially from those heretofore used for the same purpose except that their normal position in use is inclined, which inclination is permitted by the inclination of the slideways, which contain the movable bearings of the journals of the clothed rollers. The inclined slideway S for the journal S′ of the upper clothed roller A′ is shown in the main frame in Fig. 2, a like slideway being formed in the other end of the main frame for the journal on the other end of the roller. The inclined slideway S^2 for the journal S^3 on one end of the lower clothed roller A^3 is shown in Fig. 1, also the means for rotating the two clothed rollers without interference with the slide movements of their journals.

The driving-shaft B is provided with a gear D, connected by the reducing-gears D′, D^2, D^3, and D^4 with the large gear D^5, which is secured to and drives the lower roller A^3. This gear D^5 is connected by the intermediate gears D^6, D^7, D^8, and D^9 with the gear D^{10} on the upper clothed roller A′, whereby the same surface speed is positively imparted to the two clothed rollers. It will be observed that the engagement of the gears D^5 and D^{10} are at points intersected by radial lines drawn at right angles to the line of slide movement required to separate the roller-journals, so that the small slide movement required to separate the rollers does not interfere with the gear connections.

The levers and lever connections are shown in Fig. 4 in their relative positions when the machine is in operation.

The slideways are indicated by dotted lines, as are the several rollers, and the journals of the clothed rollers, as well as the cross-rods forming fulcrums for the levers, are shown in section.

The weight W is applied to the long arm of lever H, fulcrumed upon cross-rod H′ and connected by turnbuckle-link H^2 with the long arm of lever H^3, secured intermediately of its ends to the journal S^3 and fulcrumed at the end of its short arm upon the crank-arm H^4 of the crank-shaft H^5 through the link H^6. It is evident that the weight will act to force the journal S^3 upwardly in its slideway, which forces the roller A^3 upwardly against the polishing-rollers A^4 and A^5.

The weight W′ is applied to the long arm of lever J, fulcrumed upon cross-rod J′ and connected by turnbuckle-link J^2 and link J^3 with the long arm of lever J^4, secured intermediately of its ends to the journal S′ and fulcrumed at the end of its shorter arm upon the crank-arm J^5 of crank-shaft H^5 through the link J^6. The weight W′ will act to force the journal S′ downwardly in its inclined slideway toward the polishing-roll A^2.

The arrangement of levers and weights is the same at each end of the machine, the weights acting upon both journals of each clothed roller.

To separate the clothed from the polishing rollers, it is only necessary to give the crank-shaft H^5 a quarter-turn, which causes the fulcrums of both sets of journal-levers to move to permit the weights to fall to the floor or other fixed support. If the respective sheets of the drawings are inclined until the journal-slideways occupy vertical positions, it will be observed that the upper set of rollers is a considerable distance to one side of the other set and that the plane of movement of the goods in passing between the respective sets of rollers is horizontal, whereas by inclining such slideways the work passes through both sets of rollers and from one set to the other on one and the same descending plane, which plane cuts at right angles the radial plane connecting the axes of the upper set of rollers and a radial plane passed from the axis of the lower clothed roller up midway between the axes of the two polishing-rollers A^4 and A^5, whereby the most favorable relative positions of the working parts are secured, which not only facilitates the operation of the machine, but enables the machine to be built in a more compact and symmetrical form.

The polishing-rollers travel with a greater surface speed than the clothed rollers to give a polish to the goods.

The upper set of rollers serves principally to heat and partially dry the goods, the polishing-roller engaging the wrong side of the goods. Consequently the roller-pressure is comparatively light.

The ironing is finished in the lower set of rollers, the polishing-rollers engaging the right side of the goods with a relatively great roller-pressure.

The speed of the goods in passing through both sets of rollers is determined by and corresponds with the surface speed of the clothed rollers.

As a convenient means for giving the crank-shaft H^5 a quarter-turn to operate the various levers to move the roller-journals in the inclined slideways a hand-lever K may be provided, having slots K′, adapted to receive the pins K^2, projecting laterally from the crank-arm K^3, fixed upon such crank-shaft. The dotted lines show the hand-lever in position for use, and the solid lines show the lever thrown up out of the way in an idle position.

The journals of the clothed rollers have their bearings in the sleeves H^6 and H^7, which sleeves are integral with the respective levers H^3 and J^4.

J^8 is a guide-arm pivoted at J^9 and at the the joint J^{10} of the links J^2 and J^3.

The rolls herein described as hot rolls, ironing-rolls, or polishing-rolls have a polished metal surface which may be heated in any known manner.

In laundering collars, cuffs, &c., it is frequently found necessary to be able to produce upon such goods by ironing different degrees of polish and also a dead or domestic finish to meet the varying demands of public taste.

Any desired finish can be imparted with my improved machine by varying the relative peripheral speeds of the clothed and hot rolls, and I have shown in detail in Fig. 7 a change-gear used in this machine, which is omitted from the other figures of the drawings for convenience of illustration.

The mechanism shown in Fig. 7 permits three different degrees of peripheral speed to be imparted to the clothed rolls, which will be readily understood by reference to Fig. 1 in connection with Fig. 7.

In addition to the driving-gear D, I provide two other driving-gears d and d' of different diameters, all three gears being integral with the sleeve d^4 on the drive-shaft B and the smallest of said gears D being located between the two larger gears, and in addition to the first intermediate gear D′ on the stud b, Fig. 1, I provide two other gears d^2 and d^3 of different diameters, said three gears being integral with the sleeve d^6 on said stud and the largest gear d' being located between the two smaller gears, said gears corresponding in size with the three gears on the drive-shaft, respectively. The pinion D^2, which engages the gear D^3, may also be fixed on the sleeve d^6. It will thus be seen that by moving one or both of the sleeves along the shaft or stud either of the three gears on one sleeve can be brought into mesh with its respective gear on the other sleeve, whereby three different degrees of speed can be secured.

The sleeve d^4 is feathered upon the drive-shaft and may be secured in adjusted positions on said shaft by means of the set-screw d^5. A similar change-gear is employed to connect the opposite end of the drive-shaft with the hot rolls.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an ironing-machine, two sets of presser-rollers, each comprising a relatively large clothed roller and one or more relatively small polishing-rollers, so arranged that the relatively large rollers occupy approximately the same vertical plane, and the small and large rollers of each set occupy approximately paralled inclined planes; in combination with a supporting-frame having similarly-inclined slideways in which the journals of one roller of each set are movable, respectively along the inclined planes occupied by the small and large rollers of the respective sets; and a system of interconnecting levers common to each set of rollers for moving such journals along the respective inclined slideways, substantially as described.

2. In an ironing-machine, the combination with the inclined way connecting an upper with an under set of pressure-rollers; of a pair of small feed-rolls provided with intermeshing pinions, and an intermediate friction-roll engageable with one of such feed-rolls and with the more slowly moving roller of the under set of pressure-rollers, substantially as described.

3. In an ironing-machine, the combination with an upper set of pressure-rollers having the plane connecting the axes of the individual rollers in the set inclined; of an under set of pressure-rollers comprising a clothed roller and two polishing-rollers having the radial plane which passes from the axis of the clothed roller midway between the axes of the polishing-rollers inclined and approximately parallel with the radial plane connecting the axes of the upper set of rollers; an inclined way interposed between the two sets of rollers; and a stripper for one of the polishing-rolls, substantially as described.

4. In an ironing-machine having an upper and an under set of pressure-rollers, the under set consisting of a slowly-rotating clothed roller and a pair of rapidly-rotating polishing-rollers, the combination with the polishing-rollers and pinions fixed upon and larger in diameter than the rollers and lapping each other; of a driving-gear having its perimeter adapted to engage and actuate both lapping pinions, substantially as described.

In testimony whereof I have hereunto set my hand this 6th day of December, 1898.

ALONZO SHARP.

Witnesses:
FRANK C. CURTIS,
J. E. SNYDER.