

J. A. MILLER.

MECHANISM FOR COVERING BICYCLE GRIPS, &c.

(Application filed Nov. 8, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

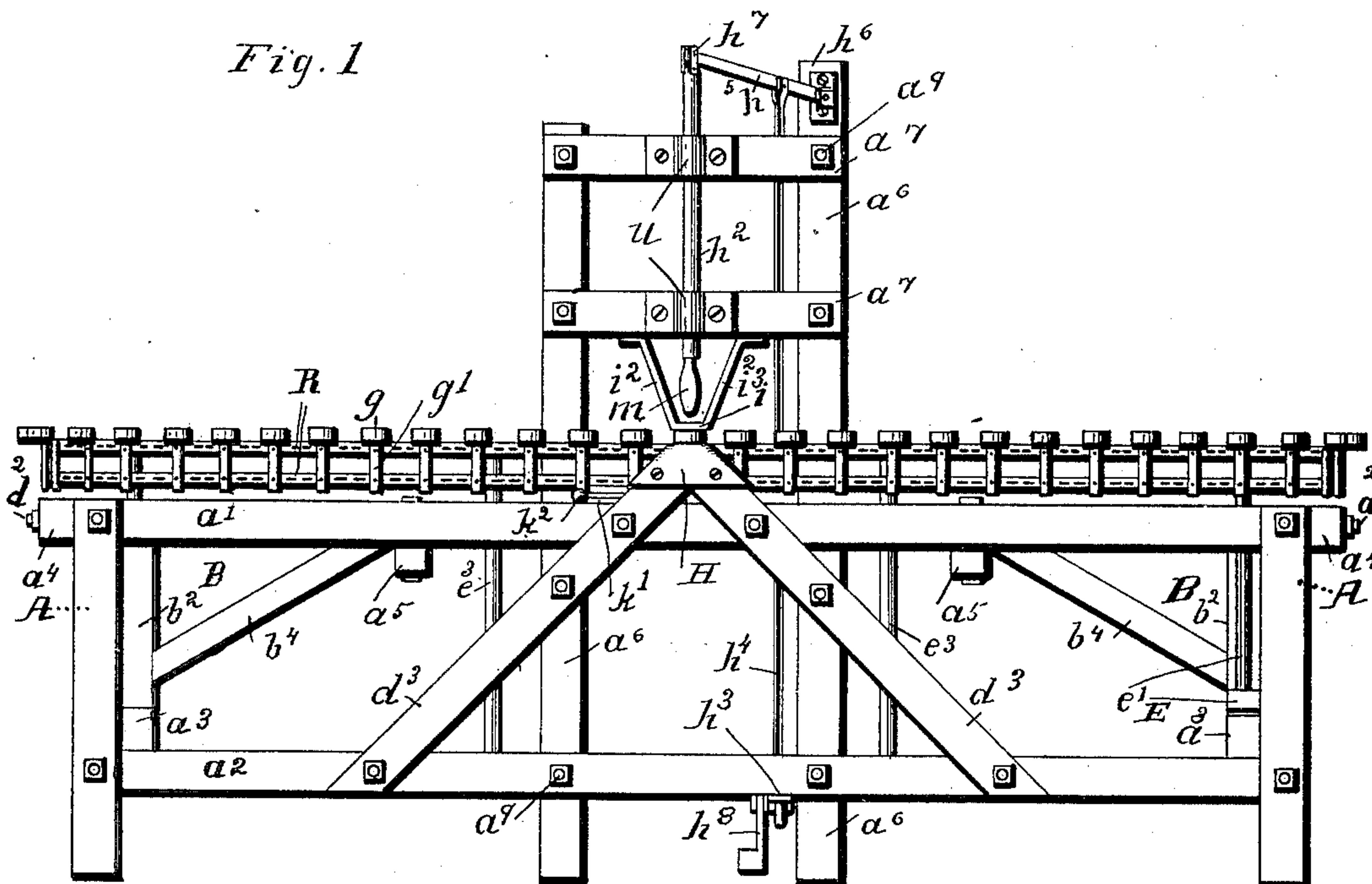
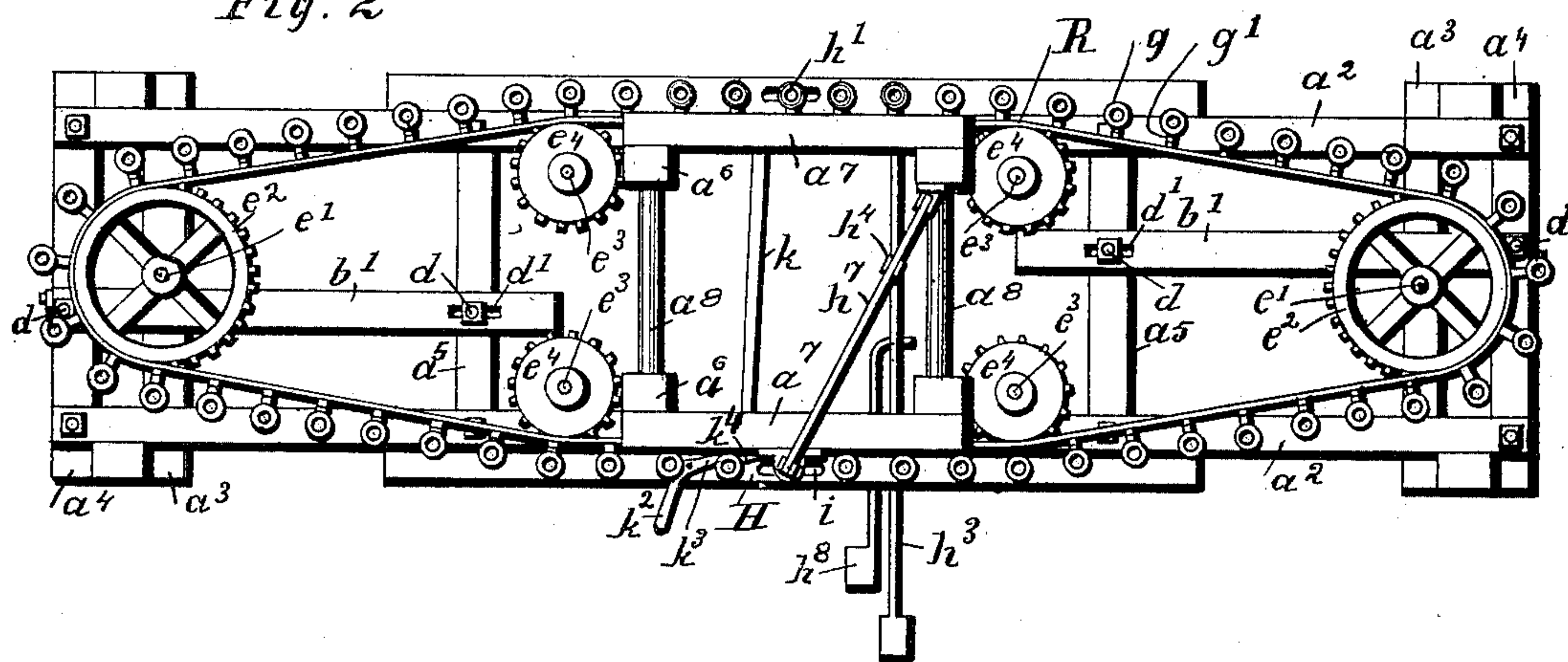


Fig. 2



WITNESSES:

Linus Barnes
Willie Barnes

Fig. 12



INVENTOR

James Acton Miller
BY
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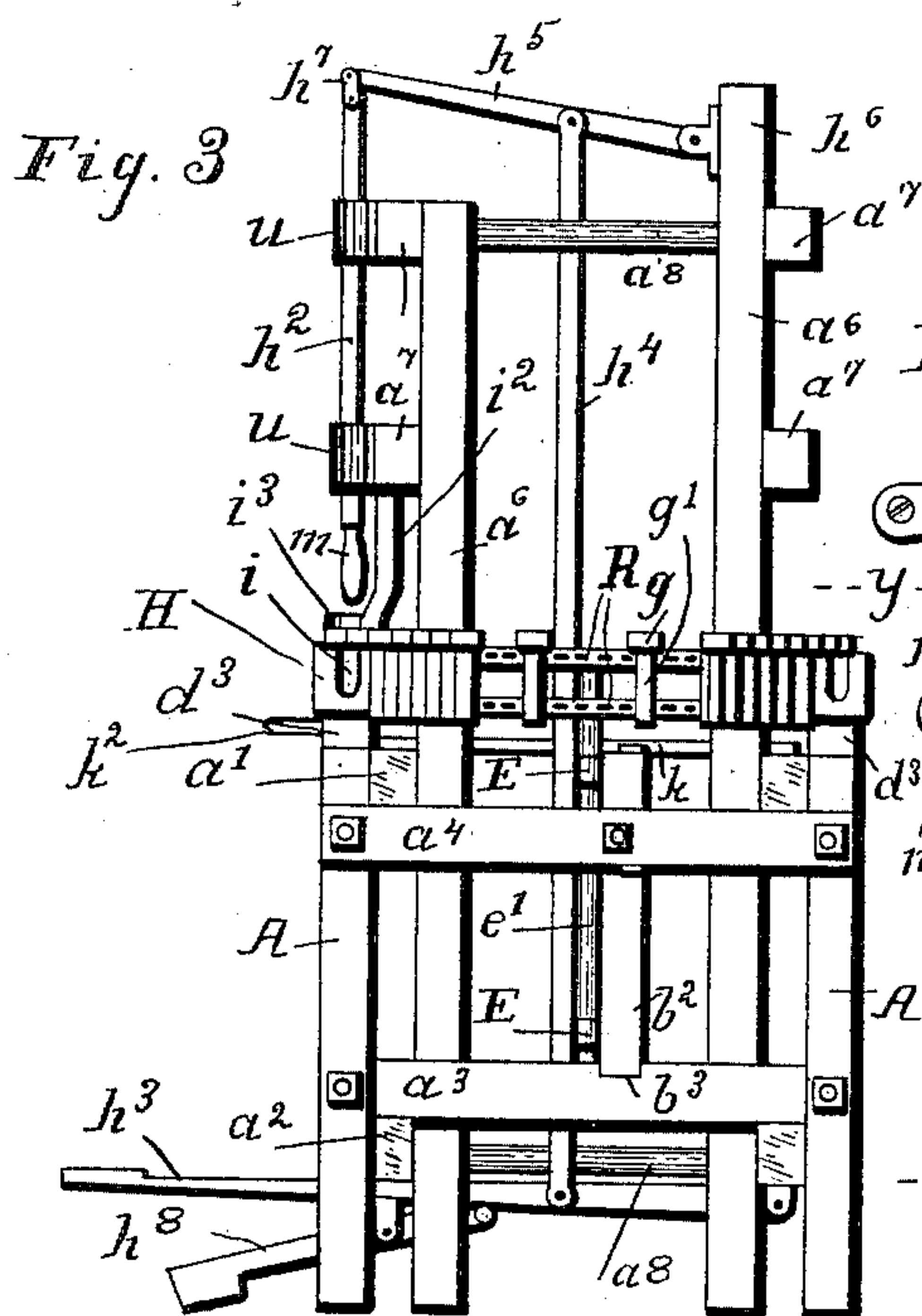
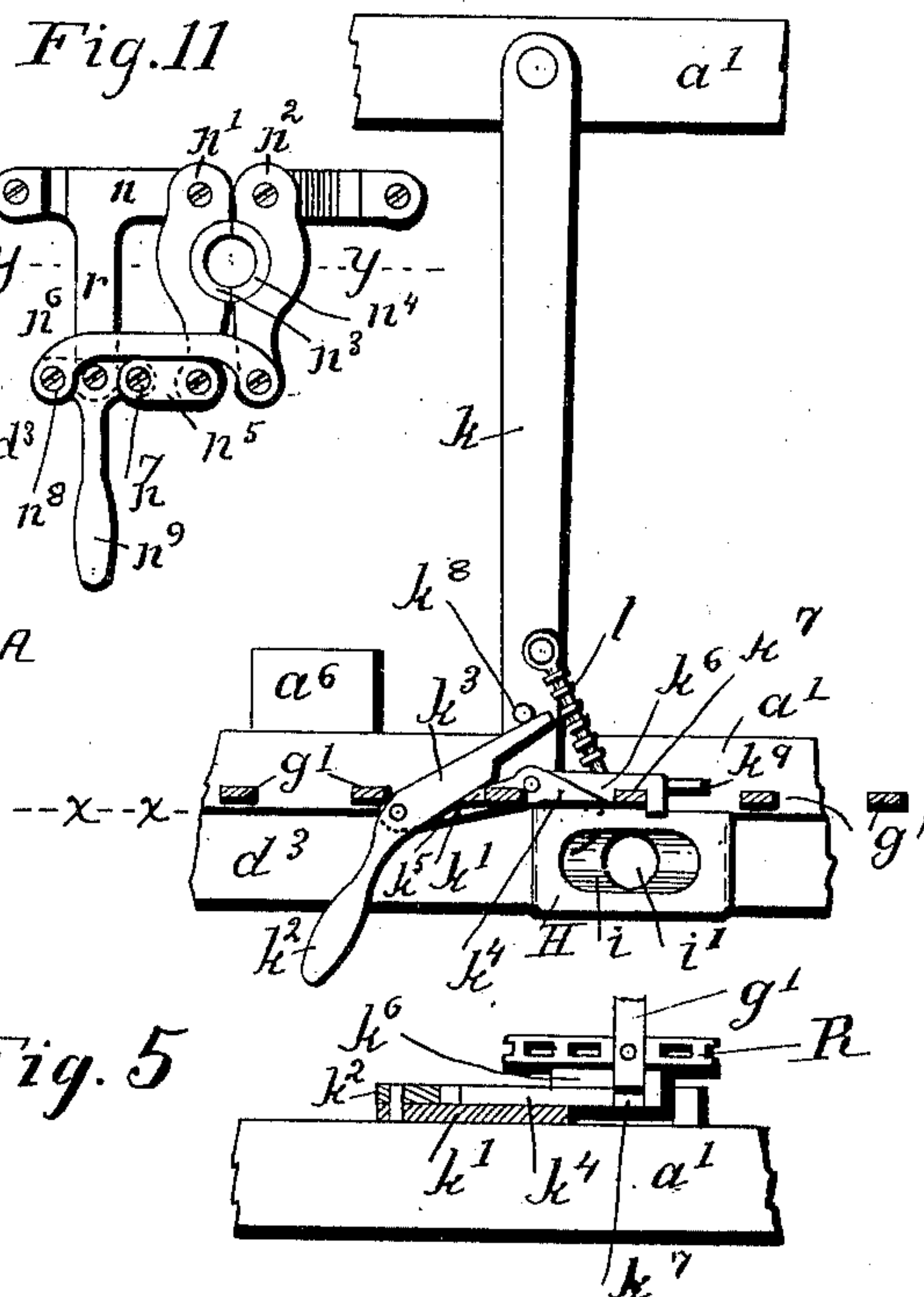
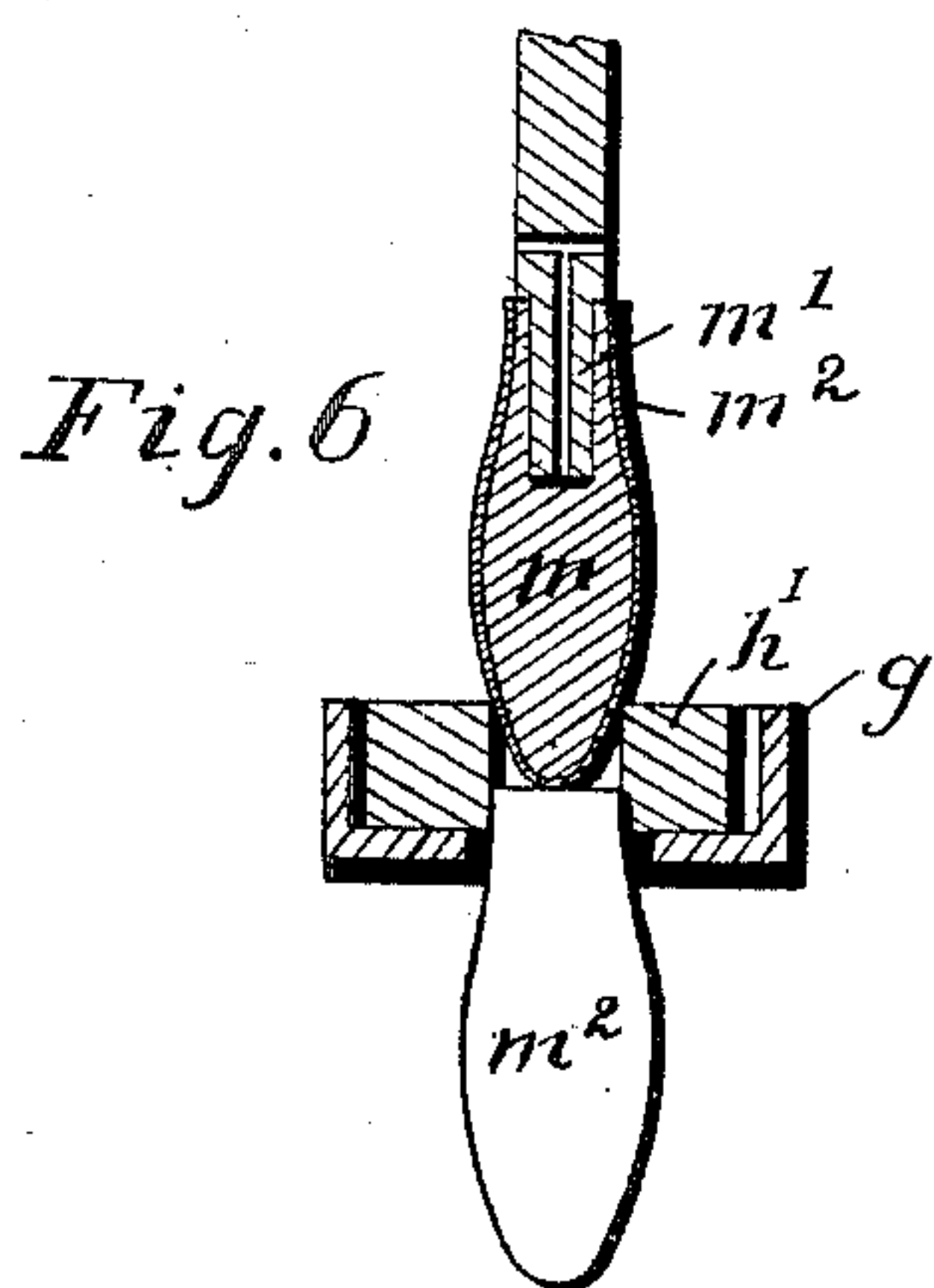
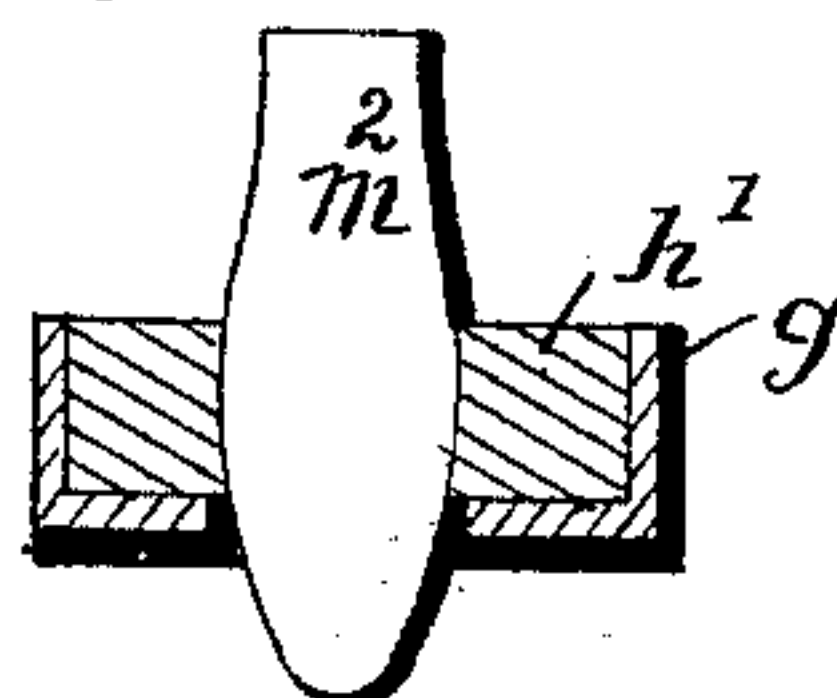
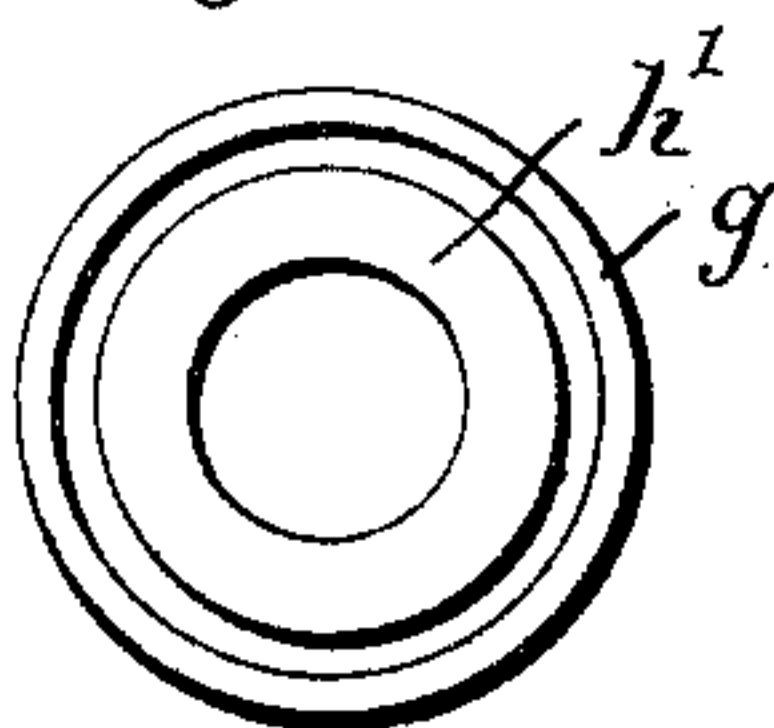
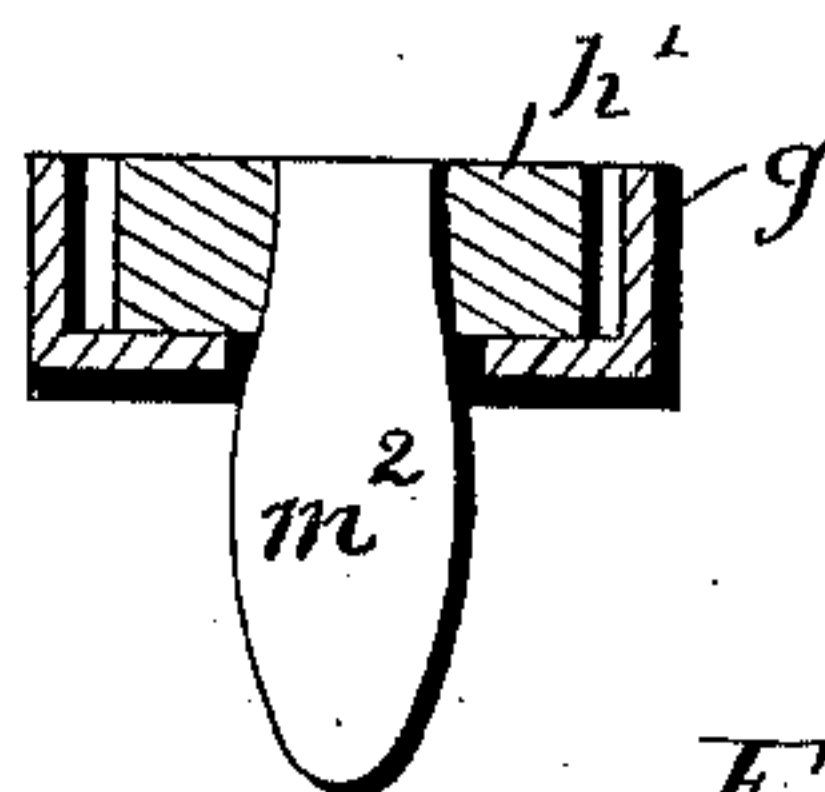
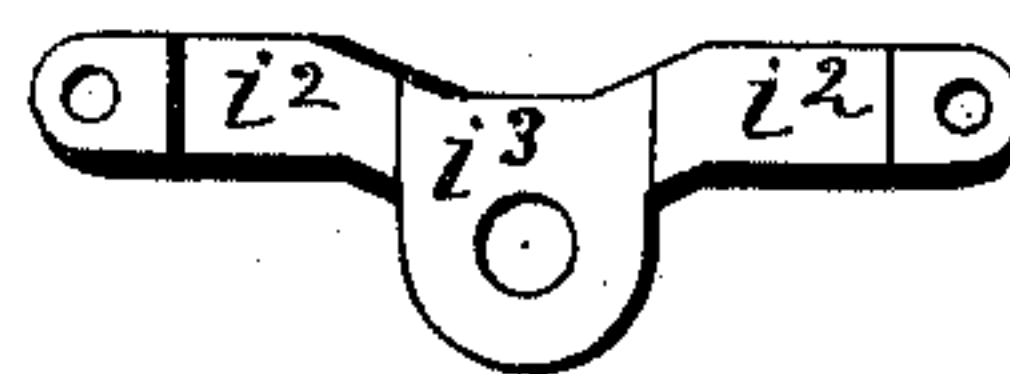
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*Fig. 4**Fig. 11**Fig. 5**Fig. 7**Fig. 9**Fig. 8**Fig. 10*

WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES ACTON MILLER, OF NEW HAVEN, CONNECTICUT.

MECHANISM FOR COVERING BICYCLE-GRIPS, &c.

SPECIFICATION forming part of Letters Patent No. 706,249, dated August 5, 1902.

Application filed November 8, 1901. Serial No. 81,552. (No model.)

To all whom it may concern:

Be it known that I, JAMES ACTON MILLER, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Mechanism for Covering Bicycle-Grips and other Articles, of which the following is a full, clear, and exact specification.

My invention relates to mechanism for superimposing an integument upon certain articles of manufacture, particularly handles, such as the grips of the steering mechanisms of bicycles or automobiles, which as usually made comprise an interior body of wood, rubber, or other suitable substance and an outer covering of fine leather, kid, or other pliable material of suitable finish and appearance.

Much difficulty is experienced in fitting a covering upon articles of bilging or irregular shape and conforming it neatly and readily thereto by simple hand methods, and my invention contemplates the employment of mechanical devices for this purpose adapted to tightly stretch and shape the integument upon the form to be covered and hold it in that condition during a sufficient interval to permit the natural setting of the covering to the shape of the form.

The invention consists in the novel employment of elastic formers, through which the articles to be covered may be forced to compress, stretch, and shape the covering upon the article, and in the construction, arrangement, and combination therewith of the mechanism for operating the same, as hereinafter more particularly described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of a machine for covering bicycle-grips embodying my invention and improvements. Fig. 2 is a plan view of the same. Fig. 3 is an end elevation of Figs. 1 and 2. Fig. 4 is a plan view of the motive mechanism. Fig. 5 is a section on line X X, Fig. 4. Figs. 6, 7, and 8 are progressive views, in vertical section, through the elastic former, showing successive stages in the operation of covering a bicycle-grip. Fig. 9 is a plan view of the elastic former. Fig. 10 is a plan view

of the stripping-stirrup. Fig. 11 is a plan view of a modified form of stripping-stirrup and an auxiliary sectional expansion former supplementary of the elastic former. Fig. 12 is a section on line *y y*, Fig. 11.

Referring to the drawings, the timber framework of the machine is shown to comprise the end posts A, the upper sills a^1 , lower sills a^2 , and lower end ties a^3 , all bolted on the inside of the end posts, the upper end ties a^4 bolted to the outside of the end posts, the cross-ties a^5 bolted to the lower side of the upper sills in the horizontal plane of the upper end ties a^4 , the central posts a^6 bolted on the inside of the sills, and the cross-bars a^7 bolted to the outer face of the central posts above and in the vertical plane of the sills. Said central posts are stayed transversely by pipe-beams a^8 , through which bolt-rods a^9 are passed, also serving to connect the posts to the upper cross-bars a^7 and the lower sills a^2 .

At each end of the machine is a lengthwise-adjustable frame or slide B, comprising a horizontal beam b^1 , resting upon the upper end tie a^4 and the cross-tie a^5 , a vertical piece b^2 , framed to the horizontal part and having its lower end guided in a kerf b^3 in the lower end tie a^3 , and a brace b^4 , bolted diagonally to the said parts. The frames are held in place by bolts d through the beams b^1 and parts $a^4 a^5$, the beams being slotted, as shown at d' , where the bolts pass through to permit longitudinal adjustment by means of the bolts d^2 , passing through the vertical part b^2 and the upper end tie a^4 . On the outside of the sills in the central zone of the machine are bolted diagonal braces d^3 , having their upper ends joined in a peak projecting above the upper sills, as shown. Mounted upon the slides in suitable bearings E are vertical shafts e^1 , each of which supports a pair of sprocket-wheels e^2 at their upper ends. Four vertical shafts e^3 are similarly mounted on the sills in the central zone of the machine near the central posts a^6 , each carrying a pair of sprocket-wheels e^4 at its upper end in the horizontal plane of the sprockets e^2 . Upon these sprockets a pair of endless conveyers R, preferably chains, though bands or belts may be used, are mounted one above the other, and to the chains are attached the

sockets g at regular intervals apart, each having a vertical stem g' at its inner side spanning and riveted to the chains, projecting somewhat below the lowermost chain, as shown. The tension of these chains or endless conveyers is effected by the longitudinal adjustment of the slides B aforesaid. The position of the sockets while traversing the central zone of the machine—that is, while traveling through the space between the two front sprockets e^4 —is immediately over the braces d^3 , the peak of which is capped with a plate or anvil H , whereon the sockets impinge and rest during the operation of forcing a bicycle-grip through an elastic former contained within the socket, as hereinafter described. For this purpose a plunger h^2 is provided and adapted to slide in vertical bearings u , bolted to the cross-bars a^7 , operated by a transverse foot-treadle h^3 , hinged to the rear lower sill and connected by a vertical rod h^4 to a lever h^5 , hinged to a high projecting end h^6 on one of the rear posts a^6 and connected to the upper end of the plunger by suitable links h^7 , as shown. A counter-treadle h^8 is arranged to act upwardly against the main treadle to return the plunger to its highest position.

The elastic formers h' comprise rubber rings having an internal diameter somewhat smaller than the bicycle-grip or other object to be forced through them and an external diameter sufficiently greater to give the required compression. The sockets in which they are held are sufficiently larger than the formers to allow for dilation of the former by the entrance therein of the article to be covered. The sockets are centrally perforated to permit said objects to pass through them and drop to the floor or into a receptacle placed below. The anvil H has a slot i , parallel with the track of the chain at that point, of sufficient depth and width to allow a bicycle-grip or other object partly forced through and projecting below the former and socket to travel horizontally through the anvil and peak of the braces, as shown. A vertical opening i' through the braces is also provided to permit the grip to drop through from the former to a receptacle below. Suspended from the lower cross-bar a^7 by the bracing-arms i^2 is a perforated plate i^3 , arranged over the anvil just above the plane of the formers, to serve as a stripper to hold the formers in the sockets during the reverse movement of the plunger. The formers are moved successively beneath the plunger and brought to position under it by means of a lever k , pivoted to the upper sill at the rear side of the machine and also resting upon the upper front sill. The horizontally-swinging end of the lever sweeps directly beneath and has a lateral extension k' in the vertical plane of the vertical stems g' of the chain of sockets. Pivoted to the end of said extension k' is a handle k^2 , having an arm k^3 projecting from its pivotal center to and resting upon the

main part of the lever interior to the angle it forms with the extension. At said angle is hinged a centrally-pivoted pawl k^4 , having one end k^5 engaged with the front side of the arm k^3 , while at the other end is a raised part k^6 in the horizontal plane of the lower ends of the stems g' of the sockets, having a notch k^7 for engaging the stems by pressure of a suitable spring l , mounted upon the main part of the lever and acting against the back of the part k^6 . The arm k^3 has a certain amount of play between the shoulder formed by the pivotal body of the pawl and a stop k^8 , fixed on the main part of the lever. By means of this construction with the parts in the position shown in Fig. 2 if the handle k^2 be moved in the direction in which the arm k^3 will engage the end k^5 of the pawl the notch k^7 will be disengaged from the stem g' and the lever swung back until it encounters a suitable stop—in this case the upright post a^6 —adapted to bring the notch of the pawl coincident with the next succeeding stem g' , and the pressure on the handle then being released the notch will engage said stem. Pressure on the handle in the reverse direction will bring the arm k^3 in contact with the stop k^8 and swing the lever back to the position shown in Fig. 1 and carry the endless chain of sockets ahead one step or through the distance from one stem g' to the next. A stop k^9 is secured to the sill to arrest the movement of the pawl in position to stop the socket centrally under the plunger, and it is preferable to engage the stem of the particular socket which is to be brought under the plunger instead of a socket one or two steps removed therefrom.

The operation of the invention as carried out by mechanism constructed as hereinbefore described and shown is substantially as follows: By means of the motive lever and its stop mechanism a socket g , with its elastic former h' , is first brought in position under the plunger as the latter stands at the upper limit of its throw. The wood core m of a bicycle grip or handle is then placed upon the lower reduced end m' of the plunger, the covering m^2 , which is a simple pouch of leather, kid, or other suitable material, having been previously dampened to render it pliable and slipped upon the wood core, an adhesive being applied to the wood core, if desired. Pressure being then applied to the foot-treadle h^3 the plunger will be brought down, and the wood core, with its loosely-fitting covering, will be forced through the elastic former, whereby the covering will be drawn and stretched upon the core and tightly fitted thereto by the natural compression of the elastic former, as shown in Fig. 7. The plunger on its return movement will be withdrawn from the bicycle-grip by the resistance of the stripper i^2 i^3 against the former, leaving the upper end of the grip clutched firmly in the former, as shown in Fig. 8. Upon the next

movement of the lever to bring another socket under the plunger the preceding socket, with the grip held by the contraction of the former therein, will move ahead out of the anvil through the slot i and will then in the step-by-step movement of the chain pass entirely around the machine and finally enter the anvil again, in which interval the covering m^2 will have become firmly set and dried upon the wood core of the grip. At this point the descent of the plunger, carrying another wood core prepared as above described, into the elastic former will release the finished grip held therein, as shown in Fig. 6, and the operation will proceed continuously in that manner, as illustrated by the progressive Figs. 6, 7, and 8.

In the production of articles of a form so nearly approaching the cylindrical as a bicycle-grip the mechanism so far described is adequate for the purpose in view; but for covering objects of extreme irregularity and variation of form and size the operation may be aided by the use of a supplementary sectional or divided former composed of two or more parts adapted for greater range of elastic distention and contraction by means of its divided form. Such supplementary former is adapted to compress the parts of the form that are smaller than the opening through the regular elastic former and after such use to readily open up to allow the larger parts of the form to pass through and be finished by the regular elastic former. This mechanism is shown in Fig. 11, in which n designates a frame analogous to and placed in the same position on the machine as the stripper i^2 i^3 in Figs. 1, 3, and 10. To the frame n , in lieu of the plate i^3 , are pivoted the jaws n^1 n^2 , jointly comprising an expansible socket lined with the rubber collar n^3 n^4 , formed in this case in half-sections and secured in place in the jaws. To the movable ends of the arms are pivoted the links n^5 n^6 , which are connected at their opposite ends to pivotal points n^7 n^8 on a lever n^9 , which is hinged to an arm r of the frame n at a point midway between and in the line of the points n^7 n^8 . The movement of the lever is thus adapted to open and close the jaws n^1 n^2 , and the operation of the device is as follows: The jaws being held in the position shown in Fig. 11 by the machine attendant, a bicycle-grip or other object having its end smaller than the opening through the elastic former beneath the sectional former may be covered in the manner described with relation to the elastic former by being forced into a suitably-proportioned sectional former, which may then be opened up by the movement of the lever-handle, allowing the bilge of the grip to pass on down into the regular elastic former to be finished, as hereinbefore set forth. On the return movement of the plunger the sectional former is adapted to act as a stripper to prevent the lifting of the elas-

tic former from its socket. It will be understood that the sectional former and the elastic former may be used wholly independently of each other or in combination, as the exigencies of the case demand.

I claim and desire to secure by Letters Patent—

1. In a machine for covering bicycle-grips or other articles of manufacture, the employment of an elastic former for compressing and shaping the covering upon the surface of the article, in combination with mechanism for forcing the elastic former into conformation with the article to be covered, substantially in the manner and for the purpose specified.

2. In a machine for covering bicycle-grips or other articles of manufacture, the combination of a conveyer, a series of former-supporters carried by the conveyer, elastic formers carried by the supporters, a plunger for forcing the formers upon the surface to be covered, and an anvil for sustaining the thrust of the plunger substantially as and for the purpose specified.

3. In a machine for covering bicycle-grips or other articles of manufacture the combination of an endless conveyer, a series of holders carried by the conveyer, elastic formers carried by the holders, plunger mechanism for forcing the elastic formers into conformation with the article to be covered, and an anvil for resisting the thrust of the plunger mechanism provided with a clearance-way for the passage through it of the covered articles while held projecting through the dies and carried along by the conveyer, substantially in the manner and for the purpose specified.

4. In a machine for covering bicycle-grips or other articles of manufacture, the combination of a frame, upright shafts and carrying-wheels supported upon the frame, an endless conveyer supported upon the wheels, a series of sockets carried by the conveyer, elastic formers carried by the sockets, a plunger for forcing the article to be covered within the formers, an anvil provided with a clearance-way for the passage through it of the covered articles while held projecting through the formers and carried along by the conveyer, and an opening for the exit of the finished work from the former by the stroke of the plunger, and mechanism for propelling the conveyer by a step-by-step movement and locating the formers centrally coincident with the axis of the plunger, substantially in the manner and for the purpose specified.

5. In mechanism for propelling an endless conveyer by step-by-step movement, the combination of a series of operating-lugs spaced along the conveyer, a lever, a pawl carried by the lever for engaging said lugs, a spring for actuating the pawl into engagement with the lugs, a handle pivotally attached to the lever engageable with the pawl to release the same

from the lugs, and stops limiting the pivotal play of the handle on the lever, substantially in the manner and for the purpose specified.

6. In a machine for covering bicycle-grips
5 or other articles of manufacture, the employment of sectionally-dilatable clamps in combination with a sectional elastic former carried by the clamps, and mechanism for spreading and contracting the several sections of

the clamp, substantially as and for the purpose specified.

Signed by me at New Haven, Connecticut,
this 2d day of November, 1901.

JAMES ACTON MILLER.

Witnesses:

GEORGE L. BARNES,
LYMAN A. HOLMES.