

No. 777,427.

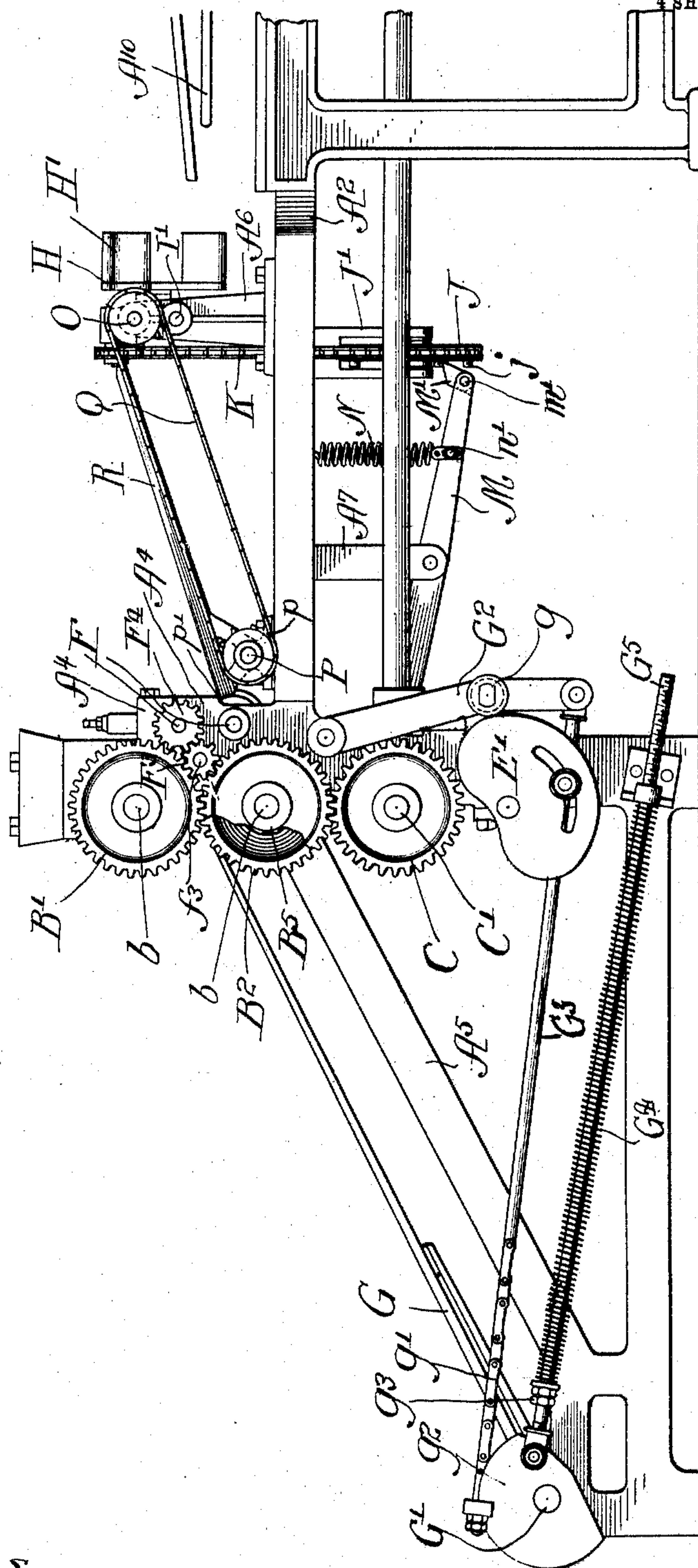
PATENTED DEC. 13, 1904.

S. T. LOCKWOOD.
BAG TURNING MACHINE.
APPLICATION FILED FEB. 20, 1904.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1



Witnesses
H. B. Smith
W. H. Hall

Inventor:
Samuel T. Lockwood,
by Robert Brown
his Atty's

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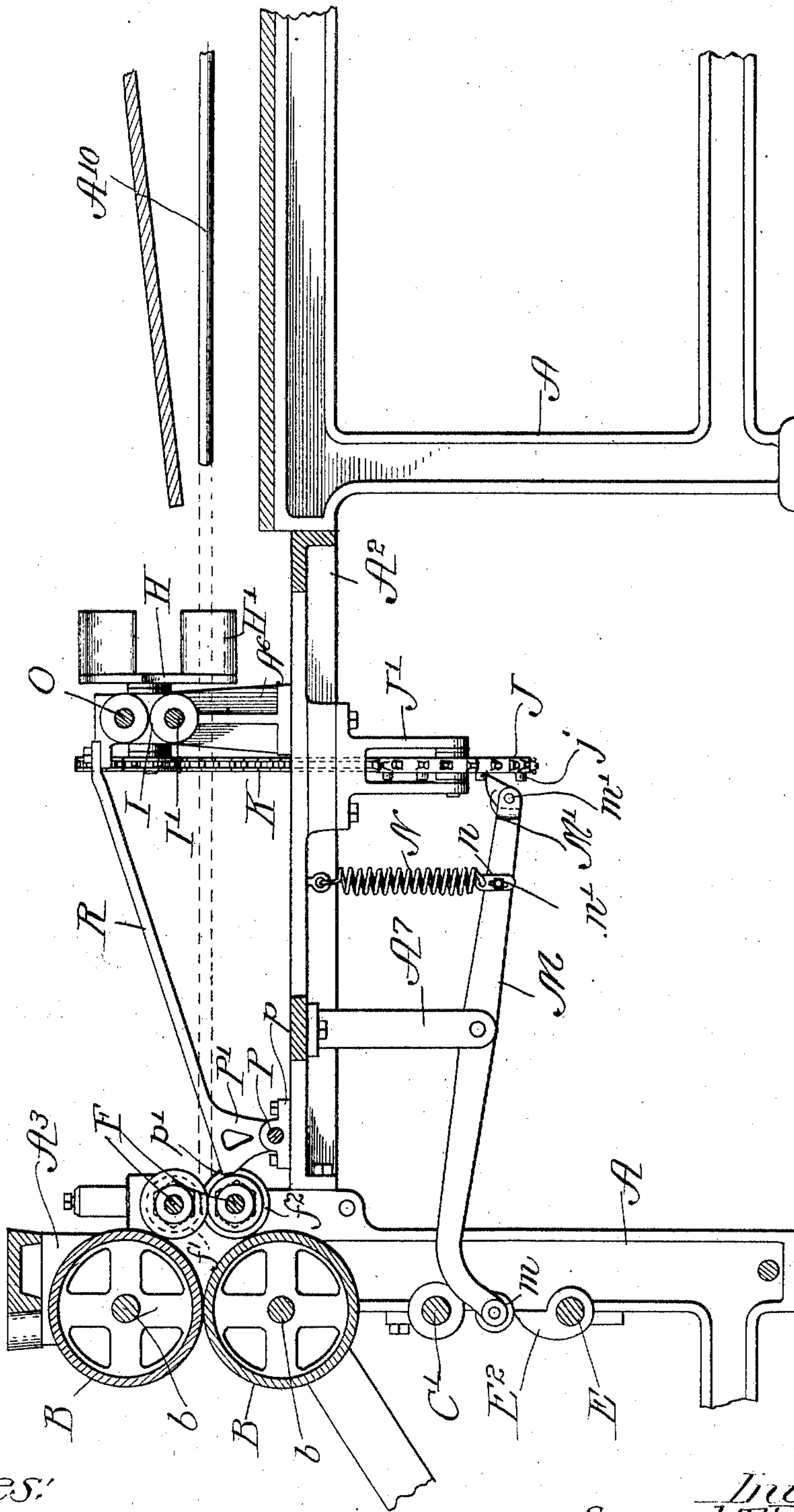
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NO MODEL.

4 SHEETS—SHEET 2

Fig. 2



Witnesses:

H. G. Daniels
W. H. Hall

Inventor:
Samuel T. Lockwood

by Robert Brown
his Attys

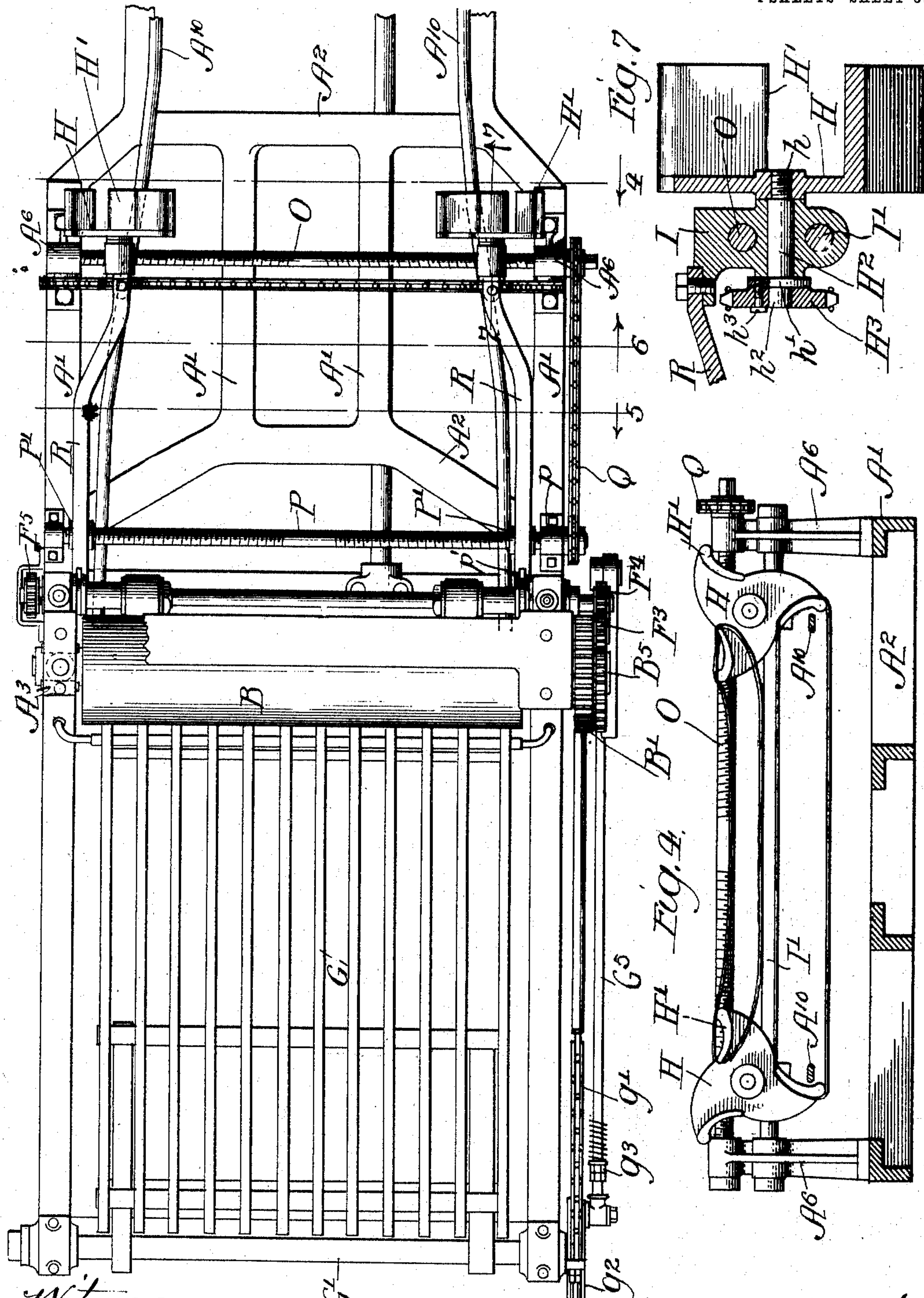
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NO MODEL.

4 SHEETS—SHEET 3.



Witnesses:
H. G. Barrett
W. L. Hall

Fig. 3

Inventor:
Samuel T. Lockwood.
By Robert Brown
his Atty.

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NO MODEL.

4 SHEETS—SHEET 4.

Fig. 5

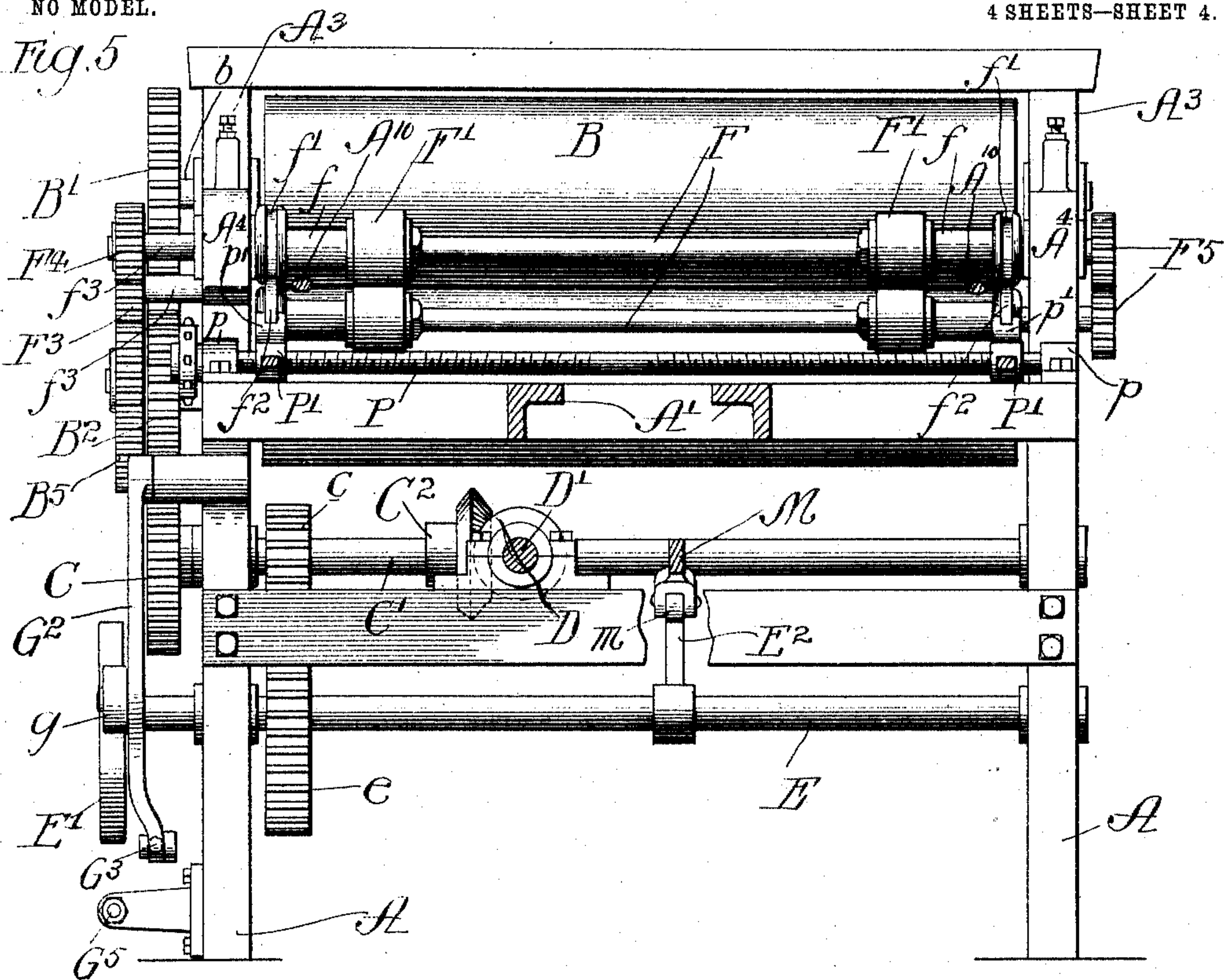
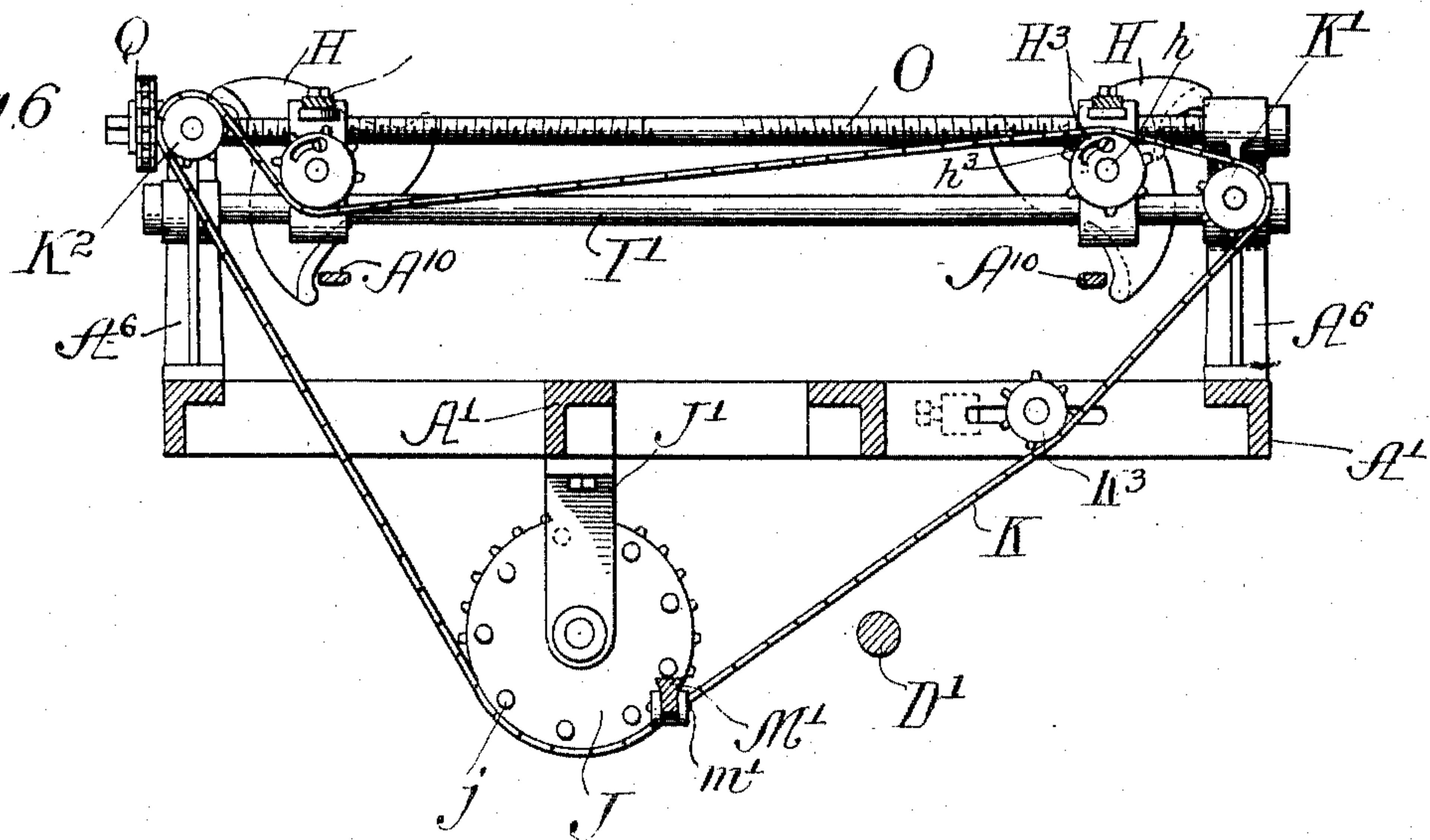


Fig. 6



Witnesses:

R. L. Barnett
W. H. Hall

Inventor:

Samuel T. Lockwood

By Pool & Brown
his Attys.

UNITED STATES PATENT OFFICE.

SAMUEL T. LOCKWOOD, OF PORTLAND, OREGON.

BAG-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 777,427, dated December 13, 1904.

Application filed February 20, 1904. Serial No. 194,549. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL T. LOCKWOOD, a citizen of the United States, and a resident of Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Bag-Turning Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in bag-turning machines of the general type shown in my prior United States Letters Patent, No. 350,204, granted October 15, 1886; and the present invention relates more specifically to improvements in the bag-holder or device by which the bag is held while being turned.

Among the objects of my invention is to simplify the construction of bag-holders for bag-turning machines; and a further object of the invention is to provide a multiple bag-holder which is so constructed that while one bag is being turned the device is in position to receive another bag and to subsequently bring the last-received bag into proper relation to the turning-arms to be turned.

I have shown my improvements as applied to a machine like that illustrated in my aforesaid prior patent, differing in its construction therefrom only so far as is necessary to adapt my new form of holder thereto. It will be understood, however, that my new form of bag-holder may be applied to machines differing in their construction and manner of operation from that herein illustrated and that the structural details of the holder itself may be considerably varied while retaining the essence of the invention.

Only such parts of the machine proper are herein illustrated as are necessary to an understanding of the application of the improvements to said machine.

As shown in said drawings, Figure 1 is a side elevation of that part of a bag-turning machine containing the holder and showing also the means for discharging the turned bags from the machine. Fig. 2 is a longitu-

dinal section of the machine, omitting some of the parts shown in Fig. 1 and including a portion of the turning-arms in their retracted positions. Fig. 3 is a plan view of the parts shown in Fig. 1. Fig. 4 is a transverse section taken on line 4 4 of Fig. 3. Figs. 5 and 6 are transverse sections taken on lines 5 5 and 6 6, respectively, of Fig. 3 looking in the directions indicated by the arrows. Fig. 7 is a detail section taken on line 7 7 of Fig. 3.

I will first describe briefly the general construction of such parts of the old machine as cooperate with my improved holder, referring back to said prior patent for a full explanation of the construction and operation of such parts, and will afterward describe the construction of my improved bag-holder and its cooperation with the illustrated parts of the machine.

The frame of the machine, so far as shown, embraces vertical legs or standards A A and horizontal, longitudinal, and transverse frame members A' A', constituting the bed of the machine.

A¹⁰ A¹⁰ designate endwise-reciprocating turning-arms, which are shown in their retracted position in Fig. 2 and in their extended and laterally-spread position in Figs. 1 and 3.

B B are pressing-rollers which receive the turned bags from the turning-arms when the latter are in their extended position and press the bags flat. The shafts *b b* of said rollers have bearing in standards A³, rising above the level of the machine-bed, one at each side thereof at the front end of the machine. Said shafts are geared together by means of gear-wheels B' B', Figs. 1 and 5, which latter are driven through the medium of a gear C, mounted on a shaft C' below the rollers B, the latter shaft being driven by a bevel-gear C² thereon, Fig. 5, and an intermeshing bevel-gear D, fixed to a horizontal shaft D', which extends forwardly from the central primarily-driven parts of the machine, as shown in my aforesaid prior patent.

E designates a horizontal rotative shaft mounted in bearings on the legs or standards A beneath the shaft C' and is geared to the shaft C' through the medium of gear-wheels *c* and *e*. The shaft E turns one complete ro-

tation during each operation of the machine and is hereinafter termed the "time-shaft" and is connected with and operates the bag-holder and also the fly by which the turned
5 bags are discharged from the machine.

F F designate upper and lower rotative shafts which are mounted in the standards A⁴ and located in rear of the pressing-rollers. Said shafts carry smaller coacting rollers F'
10 F', which act to preliminarily remove or strip the bag from the turning-arms and to present in an orderly manner the turned bag to the main pressing-rollers. Said stripping-rollers are provided with reduced extensions f f, the
15 upper ones of which are provided with grooves f' and the lower ones of which are provided with complementary ribs f². The turning-arms are adapted to pass between the reduced extensions or sleeves f of said rollers F' when
20 delivering a bag thereto, as indicated in Fig. 5, so as to insure the bag being caught by the rollers. The rollers F' are movable endwise of their shafts, but turn therewith. The shafts F are driven from a gear-wheel B⁵ on the shaft
25 of the lower roller B, the driving connections being an idle pinion F³ on a stud f³, a gear-wheel F⁴ on one of the shafts F, and intermeshing gears F⁵ at the opposite ends of said shafts, Figs. 1, 3, and 5.

G designates a fly by which the turned bags are removed from the pressing-rollers. Said fly is fixed to a rock-shaft G', which is mounted in an extension A⁵ of the frame and is operated by a cam E' on the time-shaft, a swinging lever G², pivoted at its upper end to the machine-frame and provided with a roller g,
35 engaged by said cam, and a pitman G³, which is loosely connected with the lower end of said lever and is connected at its other end through the medium of a chain g' with a crank-disk g²,
40 affixed to said rock-shaft G'. The fly is shown in Fig. 1 in position to receive a bag from the pressing-rollers and is restored to its lowermost position when the cam E' is in its inoperative position by means of a spiral spring G⁴, surrounding an endwise-reciprocating rod G⁵, hinged to said crank-disk g² and having guiding engagement with the frame of the machine, said spring G⁴ surrounding said rod
45 and being interposed between a part on the machine-frame and a nut g³ on the rod.

The parts just described are made and operate substantially in the same manner as the similar parts shown in my prior United States
55 Letters Patent, and the construction and operation thereof need not be further described herein.

My improved bag-holder consists elementarily of two like parts or arms, over which
60 the bags are placed and which are thereafter spread apart in the direction of the width of the flat bag to stretch the mouth of the bag open, so that the bag may be thrust there-through when being turned. In the preferred
65 construction of such elemental form of the de-

vice the bag-holding arms are made of a generally flat form and are designed to be substantially parallel with the flat bag when the bag is placed thereon and to be thereafter
70 spread apart and at the same time made to assume positions which are at substantially right angles to their former positions, whereby the mouth of the bag is stretched open. Such shifting of the bag-holding arms from the parallel to the transverse positions mentioned is
75 conveniently effected by mounting said arms on parts which rotate about axes generally parallel with the arms from front to rear thereof. As before stated, I prefer to employ a multiple holder, so constructed as to suc-
80 cessively present different pairs of holding-arms in position to receive bags, one pair holding a bag in position to be turned, while another pair is in position to receive a bag.

I have shown herein a practical and approved
85 form of holder which embodies the features of construction and operation hereinabove set forth. Said holder embraces two like parts, one on each side of the machine, each embracing a rotative disk or plate H, said plates be-
90 ing arranged vertically and rotating, preferably, in the same vertical plane. Said plates H are provided each with one or more bag-holding arms H', (three being herein shown,) which extend rearwardly toward the retract-
95 ed position of the bag-turning arms A¹⁰. The arms of the two rotative plates operate in pairs—that is to say, the mouth of the bag is adapted to be placed over and held by two of the arms when located by reason of their ro-
100 tation closest to each other, and as said plates rotate said arms are separated in a manner to spread or distend the mouth of the bag and to hold the same spread in position for the turning-arms to turn the body of the bag
105 therethrough. Means are provided, operated as herein shown from the time-shaft E, which intermittently turn the rotative holders one step during each complete operation of the bag-turning arms. Such one-step movement
110 of the holders moves one pair of arms H', to which a bag has been applied, in position to stretch the mouth of the bag open and the next succeeding pair in position to receive a bag. Said bag-holding arms, as herein shown, have
115 the form of short plates of concavo-convex cross-section, with the convex sides facing outwardly when the arms are in position to stretch the mouth of the bag, thereby providing rounded faces against which the mouth of the
120 bag is stretched, so as to prevent injury to the bag. Said bag-holding arms may, however, be otherwise formed and arranged so long as they retain the general mode of operation herein disclosed. The holding-arms
125 may be attached to the plates or may be made integral therewith, as found most convenient. The arms are preferably made of brass or other metal capable of taking and retaining a high polish.
130

The rotative holder-plates H are affixed to short rotative shafts H^2 , which extend forwardly therefrom and have bearing in blocks I, mounted on and movable endwise of a horizontal stationary shaft I' , which latter is fixed at its end in standards $A^6 A^6$. Each of said rotary shafts H^2 has a reduced portion h at its rear end, which has screw-threaded engagement with a central aperture of the associated holder-plate, and is provided at its other end with a flange h' , which engages the front face of the bearing I, and with a reduced portion h^2 , upon which is affixed a sprocket-wheel H^3 , by which said shaft and the connected holder are turned or rotated. As herein shown, said sprocket-wheel H^3 is affixed to the flange h' of said shaft by means of a set-screw h^3 , which extends through a curved slot in said wheel and has screw-threaded engagement with said flange. The said holders, consisting of the parts H H' , are rotated in opposite directions, each of the holders being rotated inwardly toward the longitudinal center of the machine. The means for intermittingly rotating said holders so as to move one pair of the holding-arms in position to receive a bag and the next advance pair in position to stretch the mouth of the bag are made as follows: J designates a large sprocket-wheel which is located beneath the machine-bed and is rotatively mounted in a depending bracket or hanger J' . K designates a sprocket belt or chain which is trained beneath said sprocket-wheel J and is also trained about the sprocket-wheels H^3 on the bag-holder shafts H^2 , before mentioned. Said belt is trained between the larger sprocket-wheel J and the smaller sprocket-wheels H^3 about idler-wheels $K' K^2$, the idler K' being located below the right-hand-holder sprocket-wheel and the idler K^2 being located above the left-hand-holder sprocket-wheel, whereby said sprocket-wheels and their holders are rotated in opposite directions. A tension device acts against the belt to maintain it in proper tension and consists, as herein shown, of an idler-pinion K^3 , engaging the chain between the sprocket-wheel J and the idler K' . The shaft or stud on which said tension-idler rotates engages a slot in the machine-frame, whereby shifting of said idler K^3 tightens or loosens the belt.

Means are provided as follows for intermittingly turning or rotating the larger sprocket-wheel J and therethrough the holders from the time-shaft E: M designates a vertically-swinging generally horizontal lever, which is pivoted between its ends to a bracket A^7 , depending from the machine-frame. Said lever is provided at its front end with an antifric-tion-roller m , which is adapted for engagement with a cam E^2 , affixed to the time-shaft, whereby said lever is oscillated during each rotation of the shaft, the rear end of said lever being depressed when the front end thereof

is raised. Means are provided for restoring said lever after the roller m passes off the cam, consisting in this instance of a spiral spring N, which is attached at its upper end to the machine-frame and at its lower end to said lever in rear of its pivot. Said lever carries at its extreme rear end a pivoted dog M' , which, as herein shown, is pivoted between the forks or arms of the lever end by means of a pivot-pin m' and is adapted to engage with short pins j , set in the front face of the sprocket-wheel J, as clearly shown in Figs. 2 and 6, in a manner to turn said sprocket-wheel one step at each oscillation of the lever M. Said dog is provided with a wide bearing end, as shown in Fig. 6. Said dog M' is so mounted in the lever M that when the rear end of the lever is depressed the dog will yield to pass one of the pins j , and when said lever is raised by its restoring-spring N the dog is rigid with the lever and acts by its engagement with one of said pins to rotate the wheel J and holders one step. The number of teeth in each sprocket-wheel H^3 is a multiple of the number of holding-arms of the holder—three, as herein shown—and the number of teeth in the large sprocket-wheel J should be a multiple of one-third of the number of teeth in each of the smaller wheels H^3 . The pins j are set a distance apart to give the required extent of movement to the wheels H^3 and the holder—a one-third rotation in the present instance—and the throw of the lever M is also adjusted accordingly. The cam E^2 should commence to raise the lever when the ends of the turning-arms A^{10} are some distance away from the stripping-rollers in their retractive movement and should release the lever just before the turning-arms have completed their return trip. The cam has a quick descent, so that when released the lever is restored quickly by its spring N, and the holders should be so adjusted to the width of bags being operated upon that the turners are arrested by the tension of the bag just before the roller m of the lever M strikes the hub or lowest part of said cam. This tension will be maintained until the bag is withdrawn from the holder, after which, the parts being free, the lever will complete its oscillation and the holders will complete their rotative or angular movement. In order to adjust the spring N to insure that it will promptly respond and effect its part of the operation, the lower end of the spring is connected with the lever by means permitting its point of attachment to be shifted longitudinally of the lever. As herein shown, the spring hooks into a loop n , which encircles the lever, and the loop is locked to the lever by means of a set-screw n' or otherwise.

The two parts of the holder are movable toward and away from each other in order to adjust the same to bags of varying widths.

As herein shown, such adjustment is effected by means of a horizontal right and left hand threaded screw-shaft O, located over the supporting-shaft I' for the bearings I of the holder-shaft and extending through screw-threaded apertures in said bearings. Said shaft O has rotative bearing in the upper ends of the standards A⁶, and by rotation of said shaft the bearings, carrying with them the parts of said holder, are moved toward or away from each other, as desired, said bearings sliding on the supporting-shaft I'.

The stripping-rollers F' are also movable endwise of the shafts F to adjust the same to bags of different widths, and this is preferably accomplished in unison with the adjustment of the holder.

As herein shown, the adjustment of the stripping-rollers is effected as follows: P designates a horizontal rotative right and left hand threaded shaft mounted in bearings p on the machine-frame and extending transversely across the frame in rear of the stripping-rollers F'. P' P' designates nuts having screw-threaded engagement with the shafts P and provided with notched lugs or arms p', which engage the annular ribs f² of the extensions of the lower stripping-rollers F', thereby constituting a connection between the nuts and rollers whereby when the nuts are moved together or separated the stripping-rollers partake of a like movement. This feature of the machine is substantially like that shown in my aforesaid prior patent. In order that the supplemental rollers and the holders may be adjusted in unison, the shafts O and P are provided with sprocket-wheels over which is trained a sprocket-belt Q, and one of the shafts—the shaft O, as shown in Fig. 3—is formed for connection with a crank, whereby the rotation of one shaft imparts a like rotation to the other shaft. The nuts P' are connected with the bearings I by means of bars R, attached to the bearings by bolts and herein shown as made integral with the nuts P'.

In the use of a machine provided with my improved holder the bags are placed on the pair of coacting holder-arms when in the position shown in Fig. 4—that is to say, when said arms are substantially horizontal and in a plane generally parallel with the flat mouth of the bag. Said arms when in this position are so close together that the bag fits loosely thereover and may be placed readily thereon. After the bag has been placed upon the holder in the manner described the holder-plates H are turned inwardly, thereby carrying the arms holding the bag from substantially horizontal to substantially vertical positions and stretching the mouth of the bag open in the manner shown at the lower side of the holder in Fig. 4. The bag is held in this position until the turning-arms A¹⁰ turn the bag, said arms carrying the body of the bag through

the stretched mouth and delivering the turned bottom to the stripping-rollers. While the bag is being thus turned another bag is placed on the upper horizontal pair of arms, which were brought to position by the rotation of the plates H. The bag last placed on the holder is moved downwardly into the lower or turning position as the turning-arms are completing their retractive movement, so that when the arms begin their next forward movement the bag is held in proper position to be turned. It will be observed, therefore, that it is not necessary to interrupt the operation of the machine for the purpose of placing bags on the holders, as is true in my prior construction above referred to, and that the capacity of the machine is limited only by the speed at which the turning-arms may be reciprocated.

While I have shown the holder-arms H' as made each of a single piece and transversely continuous, yet it is obvious that the proper function of said arms will be preserved if the central parts thereof be omitted and each consist of two parallel members embodying what are now the marginal parts of the single or continuous arms. The term "holding-arm" is not intended, therefore, to be limited to a continuous arm, but such arm may consist of more than one part. The turning-arms A¹⁰ pass near the inner faces of the holding-arms in turning the bag, as shown in Fig. 4.

It is to be understood that the structural details of my improved holder may be considerably varied without departing from the spirit of my invention, and I do not wish to be limited to such details except as herein-after made the subject of specific claims.

I claim as my invention—

1. In a bag-turning machine, a bag-holder consisting of two holding-arms which, when in position to receive the bag, are generally parallel with the mouth of the flat bag, and means for moving said arms away from each other and turning the same substantially perpendicular to their former positions.

2. In a bag-turning machine, a bag-holder embracing two holding-arms which, when in position to receive a bag, are disposed horizontally in the same general plane, and means for moving said arms away from each other and for bringing the same into substantially vertical planes.

3. In a bag-turning machine, a bag-holder embracing generally two flat holding-arms which, when in position to receive a bag, are disposed with their margins facing each other and means for moving said arms away from each other, and for turning them with their flat sides facing each other.

4. In a bag-turning machine, a bag-holder comprising two rotative parts, bag-holding arms extending laterally therefrom and operating in pairs, and means for intermittently rotating said parts.

5. In a bag-turning machine, a bag-holder comprising two rotative parts, holding-arms extending laterally therefrom and operating in pairs, said arms being moved toward and 5 away from each other by rotation of said parts.

6. In a bag-turning machine, the combination with the reciprocatory turning-arms, of holding-arms located, when holding a bag 10 thereon, laterally outside of said turning-arms, and means for spreading said arms apart and for moving them together.

7. In a bag-turning machine, a bag-holder comprising two rotative parts, holding-arms 15 extending laterally therefrom, and operating in pairs, means for intermittently rotating said parts, said arms, when in position to receive the bag, being generally parallel with the mouth of the flat bag, and being adapted, 20 by rotation of the parts to be moved away from each other, and to be brought into a position substantially perpendicular to their original positions.

8. In a bag-turning machine, a bag-holder 25 comprising two plates which rotate about parallel axes, and holding-arms projecting laterally from said plates and operating in pairs.

9. In a bag-turning machine, the combination with bag-turning arms, of a bag-holder 30 comprising two or more sets of parts for receiving and holding the bags with their open mouths directed away from said turning-arms, and means for operating the same, one of said sets being in position to receive a bag, while 35 the other set is in position to hold a bag to be turned.

10. In a bag-turning machine, a bag-holder comprising two rotative plates, each provided with a plurality of holding-arms projecting 40 laterally therefrom, the holding-arms of the two plates operating in pairs, one pair of said arms being in position to receive a bag, while the other pair is in position to hold a bag to be turned.

11. In a bag-turning machine, a bag-holder 45 comprising a plurality of pairs of holding-arms, the arms of each pair, when in position to receive a bag, being generally parallel with the mouth of a flat bag, and means for moving said arms of a pair away from each other, and 50 constructed to bring the same generally perpendicular to their original positions, one pair of said arms being in position to receive a bag while another pair is in position to hold a bag 55 to be turned.

12. In a bag-turning machine, a bag-holder

comprising two plates which rotate about parallel axes, each of said plates being provided with a plurality of holding-arms, and the holding-arms of the two plates operating in 60 pairs.

13. In a bag-turning machine, a bag-holder comprising two plates, holding-arms projecting laterally therefrom the holding-arms of the two plates operating in pairs, shafts at 65 tached to said plates, bearings in which said shafts are rotatively mounted, and means for intermittently rotating said shafts and said holders.

14. In a bag-turning machine, a bag-holder 70 comprising two plates, holding-arms projecting laterally therefrom, the holding-arms of the two plates operating in pairs, shafts attached to said plates, bearings in which said shafts are rotatively mounted, means for in- 75 termittently rotating said shafts and said holders, and means for moving said bearings toward and away from each other to adjust the holders to bags of different widths.

15. In a bag-turning machine, a bag-holder 80 comprising two plates, holding-arms projecting laterally therefrom, the holding-arms of the two plates operating in pairs, shafts attached to said plates, bearings in which said shafts are rotatively mounted, means for in- 85 termittently rotating said shafts and said holders, and means for moving the bearings toward and away from each other to adjust the holders to bags of different widths, comprising a right and left hand screw-threaded 90 shaft extending through screw-threaded apertures in said bearings.

16. In a bag-turning machine, the combination with bag-turning arms, of a bag-holder 95 provided with means for receiving a bag thereon at the time another bag is being held thereby with its open mouth directed away from said turning-arms and in position to be turned, and means subsequently moving the bag last received by the holder in position to 100 be turned and for bringing the holder in position to receive another bag.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of witnesses, this 19th day of January, A. D. 105 1904.

SAMUEL T. LOCKWOOD.

Witnesses:

H. C. EASTHAM,
H. RUSSELL ALBEE,
E. W. AMESBURY.