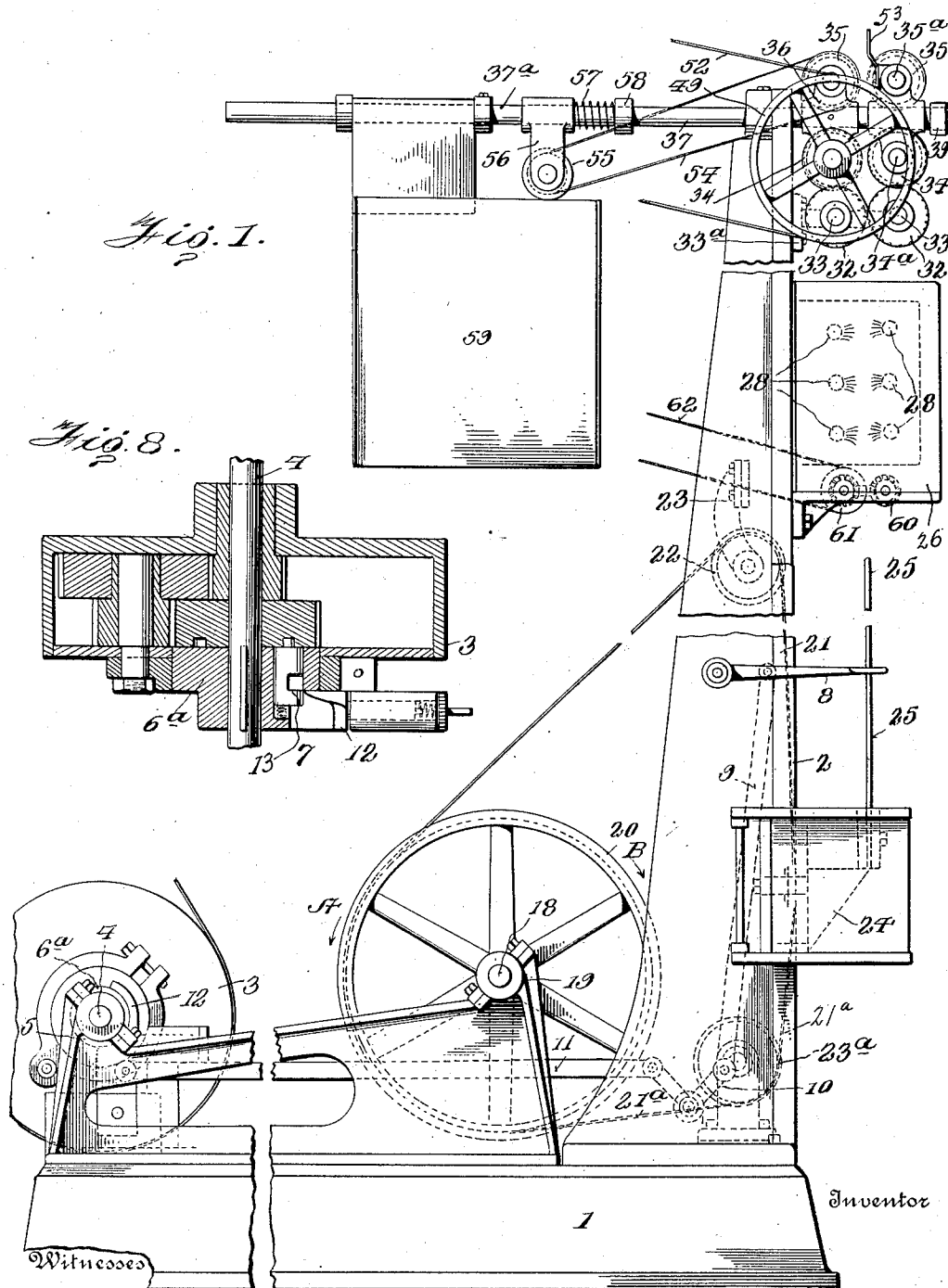


G. COLLIS.
FABRIC SINGEING MACHINE.
APPLICATION FILED SEPT. 16, 1911.

1,043,672.

Patented Nov. 5, 1912.

6 SHEETS-SHEET 1.



Edw. H. Murray,
James Atkins

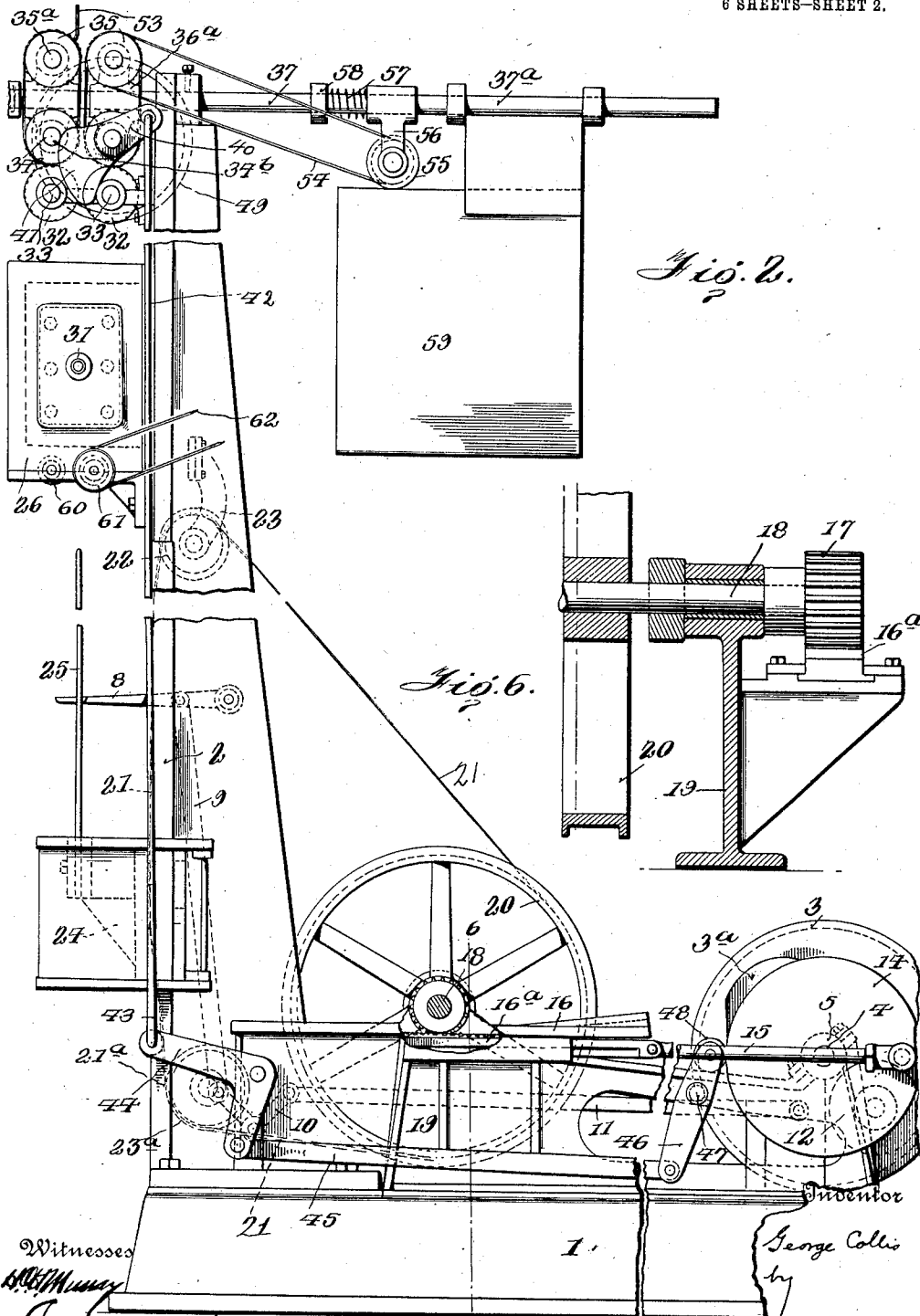
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6 SHEETS-SHEET 2.



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6 SHEETS-SHEET 3.

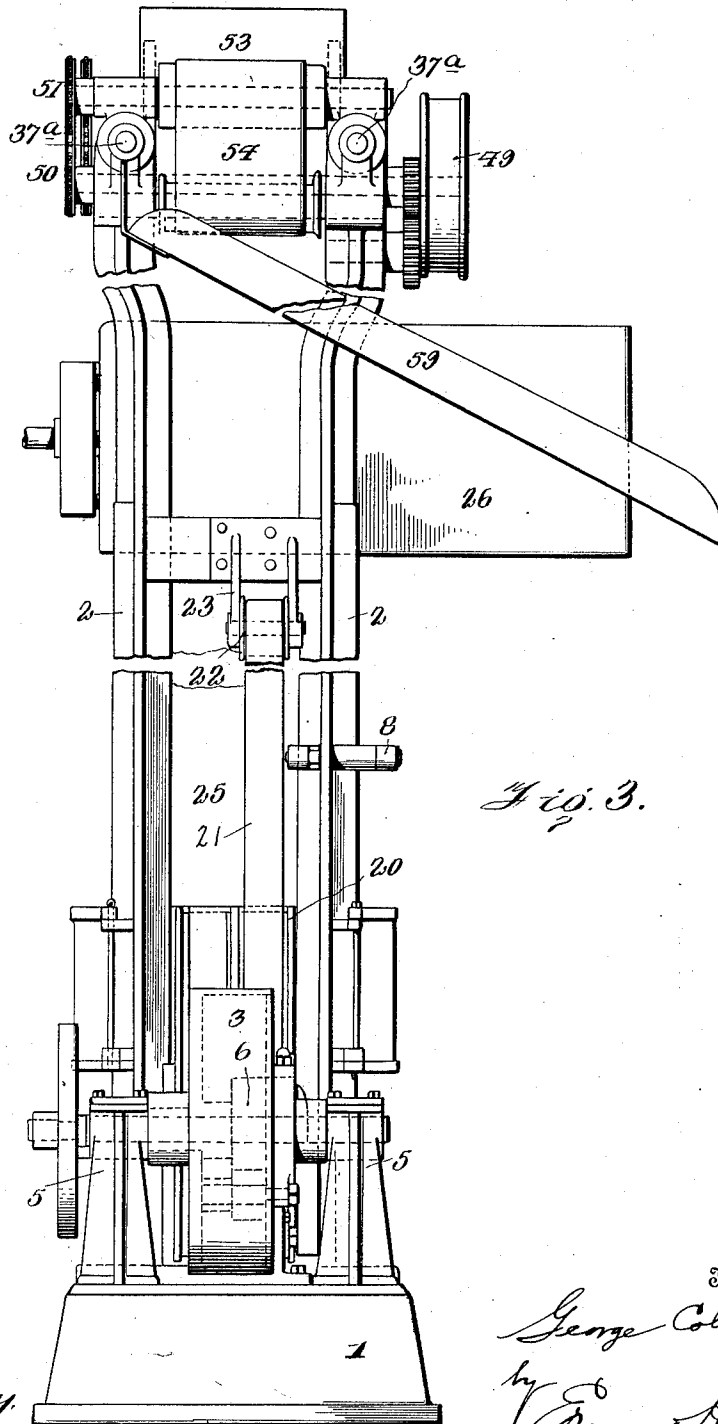


Fig. 3.

Witnesses

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6 SHEETS—SHEET 4.

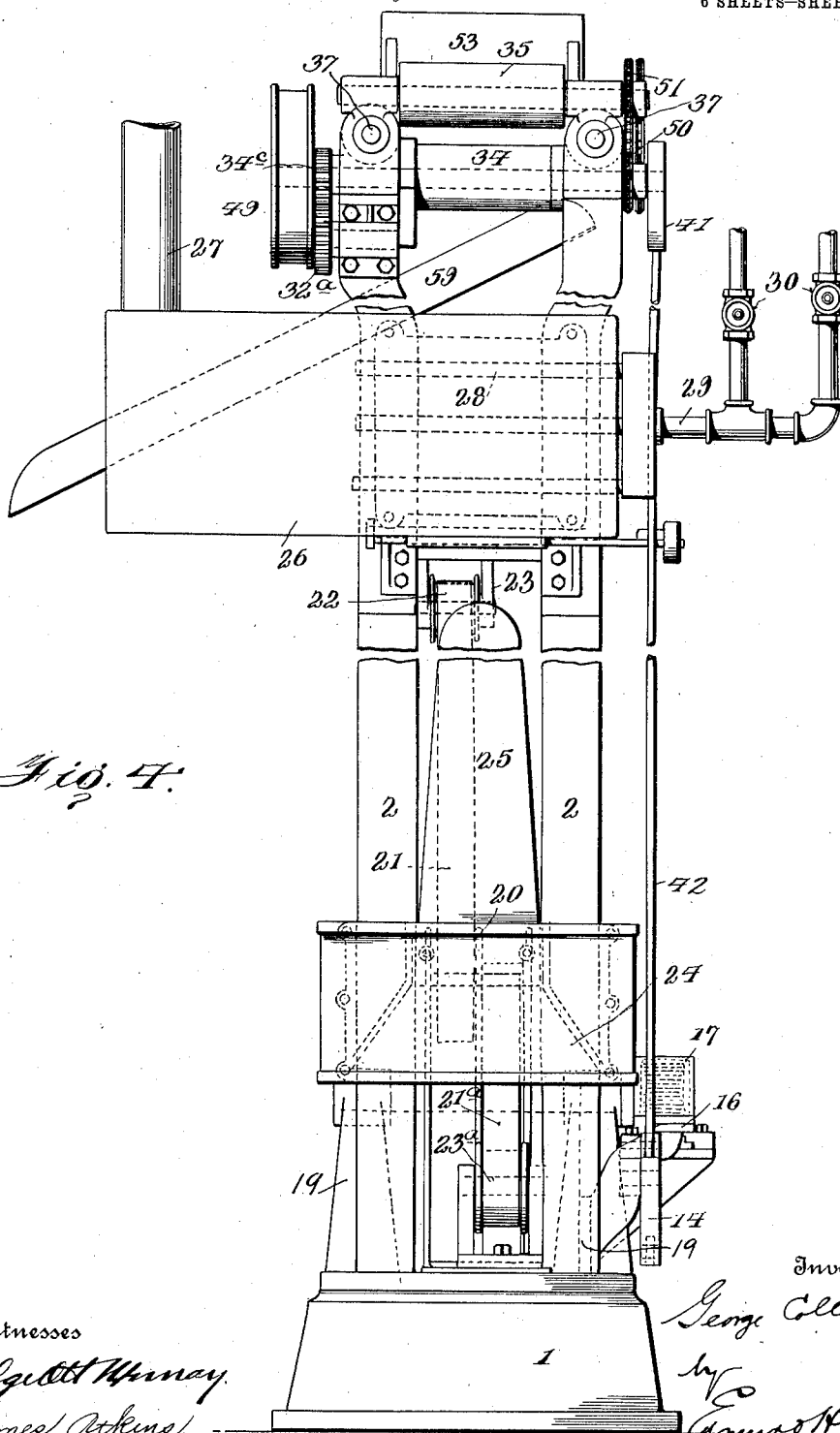


Fig. 4.

Witnesses
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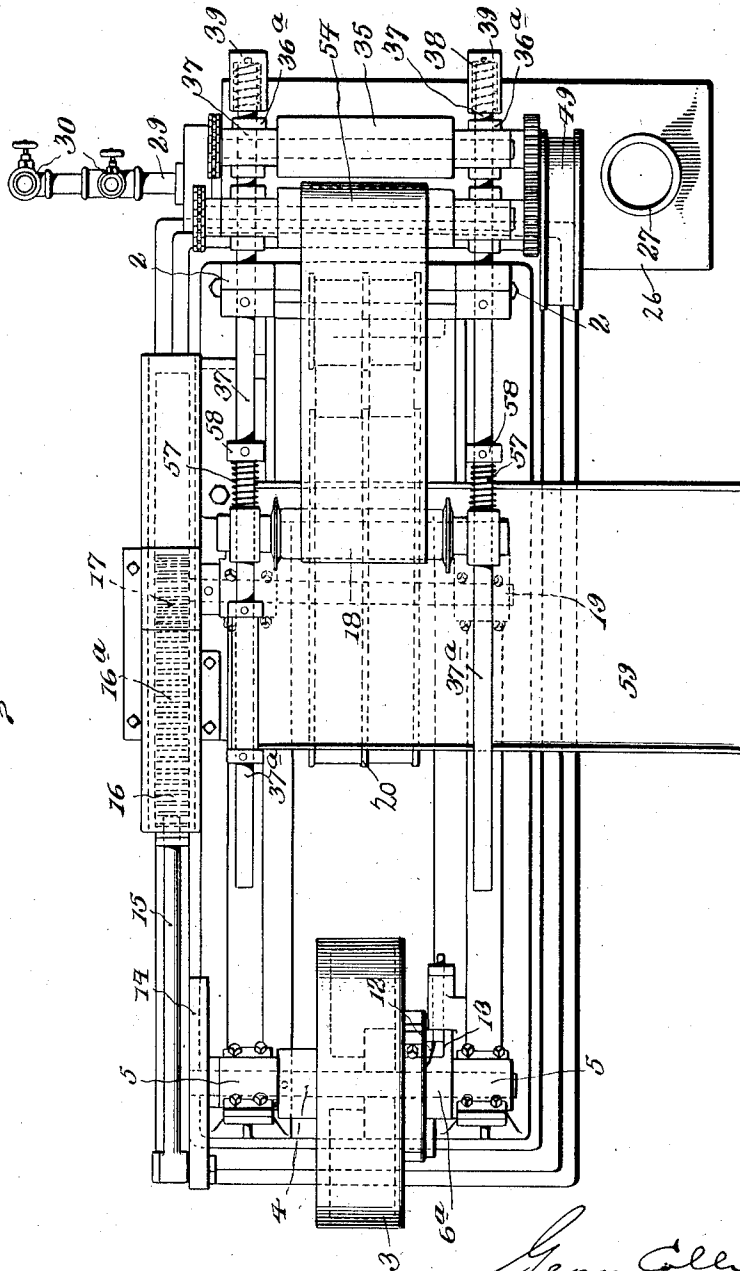
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Patented Nov. 5, 1912.

6 SHEETS-SHEET 5.

Fig. 5.



Witnesses
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Fig. 7.

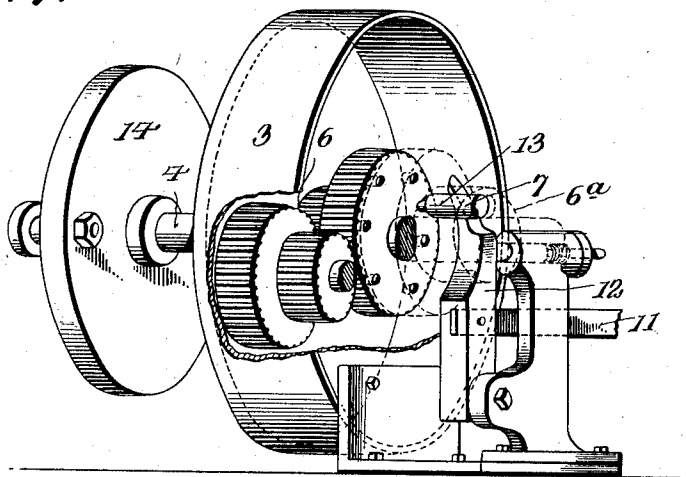


Fig. 9.

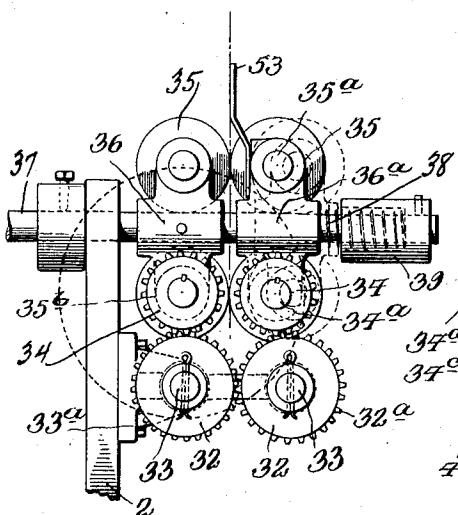
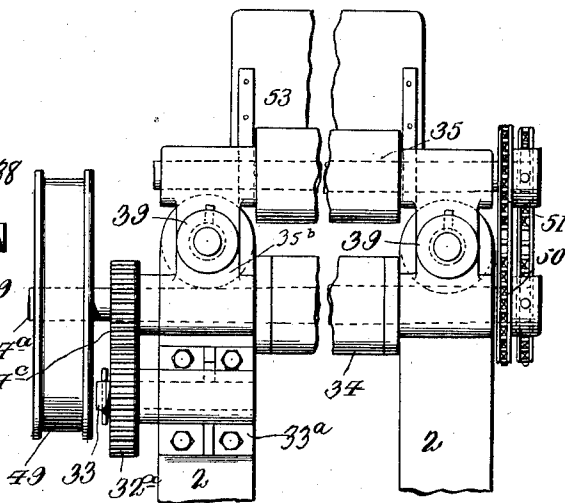


Fig. 10.



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UNITED STATES PATENT OFFICE.

GEORGE COLLIS, OF DUBUQUE, IOWA, ASSIGNOR TO THE COLLIS COMPANY, OF DUBUQUE, IOWA, A CORPORATION OF IOWA.

FABRIC-SINGEING MACHINE.

1,043,672.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed September 16, 1911. Serial No. 649,726.

To all whom it may concern:

Be it known that I, GEORGE COLLIS, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Fabric-Singeing Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to fabric singeing machines and more especially to those of the class which are adapted particularly for singeing hosiery and the like.

15 The object of my invention is primarily to construct a machine of the character specified which, though comprising a comparatively few parts and mechanisms, yet is capable of rapid operation, and this without the usual danger of the fabric being burned or scorched.

Another object of my invention is to provide a machine of this character which is largely, if not entirely, under the complete control of a single operator.

25 A further object is to provide such a machine with means conveniently located for controlling the operation of its parts and mechanisms and, whereby such operation may be carried on practically continuously.

30 Another object is to arrange the structures so that, for the most part, they extend vertically, and move in a substantially vertical plane, whereby valuable floor-space is saved, and, moreover, the heat and fumes from the machine are located above the head of the operator.

35 With these and other objects in view, the invention resides in the novel combination and arrangement of parts and mechanisms, all as hereinafter more particularly described and claimed.

40 In the accompanying drawings—wherein I have illustrated an exemplification of my invention as embodied in one form of machine (though it is to be understood that I may employ other embodiments following the general principles of my invention)—Figure 1 is a view in side elevation of the machine embodying said embodiment of my invention; Fig. 2 is a similar view, from the opposite side; Fig. 3 is a view in rear elevation of the machine; Fig. 4 is a front ele-

55 vational view thereof; Fig. 5 is a view in plan of the same; Fig. 6 is a fragmentary view in vertical section, taken on the line 6—6 of Fig. 2; Figs. 7 and 8 are enlarged views, in perspective and section, of the machine-drive; and Figs. 9 and 10 are fragmentary views of an upper portion of the machine.

60 In these drawings, the numeral 1 designates the base or bed of the machine, and 2, 2 upstanding supporting standards or uprights mounted at one end of the machine-base. It will be understood that these two parts (the base and the uprights) are the main supporting structures of the machine. Said base is only of sufficient length and width as to sustain certain mechanisms (presently to be described) because it is a desideratum of my invention to conserve floor-space to as great an extent as possible.

65 The drive-mechanism (which I shall now describe) comprises a band-wheel 3, loosely mounted on a short shaft 4 suitably journaled in bearings in trunnions 5, 5, extending upwardly from the base, and which wheel is driven from any suitable source of power, as, for instance, by a motor (not shown) or by shafting (not shown) as may be desired. By means of a train of gears 6 (Figs. 7 and 8) and a clutch-mechanism 7, said wheel may be clutched to its shaft. The clutch-mechanism is controlled by a lever 8 pivoted on one of the uprights 2 and, through a vertical connecting rod 9, bell-crank-lever 10, and a horizontal connecting rod 11, is adapted to position a pivoted clutch-actuator 12 which is arranged to engage a spring-controlled clutch-pin 13 slidably disposed in the hub 6^a of one of the train of gears aforementioned.

70 Keyed on the shaft 4 adjacent one end thereof is a crank-disk 14 to which is concentrically connected a reciprocating rod 15. This rod connects at its other end with slide 16 having a rack 16^a on its upper edge. Adapted to mesh with and be driven by said rack is a pinion 17 keyed on a stub-shaft 18 journaled in trunnions 19, 19, disposed at the end of the base opposite the trunnions 5, 5. Carried by said shaft 18 is a two-channeled drive-wheel 20. It is to be understood that the band-wheel 3 is a constantly rotat-

ing element, whereas said second drive-wheel 20 is only intermittently actuated and has only a partial rotation—first in one direction, and then in the opposite, as denoted by the arrows A and B in Fig. 1—and this is because the reciprocation of the rod 15 and slide 16 effects a corresponding movement of said wheel 20.

It will now be understood that the structure already described constitutes the drive-mechanism of the machine. I shall now describe the mechanisms which are driven thereby: Suitably secured to said drive-wheel 20 and adapted to be wound upon the same (when revolved in one direction) in one of the channels thereon is a strap 21 which passes up over an idler 22 journaled in brackets 23 secured between the uprights 2, as shown. Also suitably secured to said drive-wheel 20 and adapted to be wound upon the same in the other of its channels (when said wheel revolves in the opposite direction) is a second strap 21^a which passes down and over an idler 23^a carried by brackets secured adjacent the lower ends of the uprights 2.

The uprights 2, 2, are formed as guides or ways. Adapted to slide up and down thereon is a cross-head 24 of any appropriate form and size but preferably such as that illustrated. To this cross-head, the straps 21 and 21^a are secured, as shown. Upstanding from and mounted on said cross-head is a fabric-carrier 25 in the form of a sustaining member or form, of suitable length to carry a stocking stretched to full length. The structure last described constitutes the stocking-positioning mechanism and is driven by the driving mechanism already set forth.

Mounted on the uprights and in the path of upward travel of the stocking-form 25, is a casing 26 open at top and bottom and provided at one end with a flue 27 and containing a series of singeing burners 28 which connect by means of a pipe 29 (controlled by turn-cocks 30) with a suitable source of supply of gas or whatever form of fuel is utilized. The casing is sufficiently elevated from the base to be above the plane of the head of the operator, and the flue thereon is adapted to remove the products of combustion and smoke caused by the singeing of the fabric. It will be observed that there is a series of pairs of the burners and that each of the pairs projects toward its companion burner. In this way, a vertical battery of burners is provided, all incased in the housing or casing 26. A door 31 at one end of the housing permits access to the burners to light or clean them. The supply of fuel to these burners is conveniently regulated by means of the cocks or valves 30, already referred to. It will now be seen that, as the hosiery form is moved upwardly un-

der the action of the positioning-mechanism, as heretofore explained, it will be projected through the open bottom of the casing and in juxtaposition to the respective pairs of burners and be thereby singed. The casing and its contained burners, etc., therefore constitute the singeing structure of the machine. The upward travel of the hosiery form is not discontinued after it has passed through the singeing structure described. On the contrary, such travel is continued and for a purpose now to be explained.

Mounted at or adjacent the upper extremities of the uprights 2 is a snuffing structure comprising two juxtaposed snuffing rollers 32. Each of these rollers is carried by a stub-shaft 33. The shafts of these two companion rollers are preferably journaled in a bracket 33^a mounted on the uprights and extending outwardly therefrom, as shown in Fig. 9. Superposed to these snuffing rollers 32 are two pairs of gripping rollers 34 and 35 carried by shafts 34^a and 35^a journaled in portions 35^b of two two-membered brackets 36 and 36^a, carried by horizontally-extending arms 37 mounted at the upper ends of the uprights 2. As will be seen by referring to Fig. 9, the inner brackets 36 are fixed on their said arms, while the brackets 36^a are adapted to have a limited sliding movement. Such movement is, in each instance, controlled by a spring 38 abutting against said bracket and housed at its opposite end in a socket-member 39. By the arrangement described, the outer series of rollers 34 and 35 is adapted to be spaced from their companion rollers. Such spacing is effected by means of the following structure: A pusher-arm 40 is pivoted at its inner end to one of the uprights and has its outer end provided with a cammed enlargement 41 adapted to have coöperative engagement with a stud or extension 34^b carried by the shaft 34 of the intermediate rollers. An elongated actuating-rod 42 is connected at one end to said pusher, and, at its lower end 43, is pivotally connected to a bell-crank-lever 44, to which is also pivotally connected a horizontal arm 45. To this arm is pivoted a link 46 fulcrumed at 47 and carrying at its opposite end a roller 48 adapted to travel on the periphery of the crank-disk, already referred to, and upon which is formed a cam 3^a. As the disk rotates, it will, at one portion of its revolution, cause said cam to engage the roller-provided link 46 and rock the same on its fulcrum. Such a movement actuates the connecting rods and the intermediate bell-crank-lever to rock the pusher on its fulcrum, and this effects an outward movement of the roller-brackets and their rollers, whereby they are momentarily separated. They are returned to normal position by the spring 38.

In order to effect a simultaneous rotative movement of the several rollers described, each is provided with a gear, as 32^a and 34^c, each gear meshing with its juxtaposed gear.

5 These gears are driven by a pulley 49 mounted on one of the shafts 34^a, and which shaft carries a gear 50 adapted to drive, by a chain-gear 51, the upper rolls. Said pulley is driven by a belt 52 operated by a suitable
10 power-device (not shown).

The rollers 34 and 35 are designed to pull the stocking off the hosiery-form. When so removed therefrom, a deflector or plate 53 (suitably secured to the extremities of the
15 uprights) guides the stocking onto a belt 54 which passes around the upper inner roller and, also, around a pulley 55 suitably supported on a depending bracket 56 slidably mounted on an extension 37^a of the arm 37,
20 and which bracket, under the influence of a spring 57 (encircling said arm and abutting against an adjustable collar 58) tends to maintain said belt taut. Also depending from said extension 37^a is an inclined chute
25 59, onto which said belt delivers the stockings after they have been removed from the hosiery-form, in the manner already explained. This chute feeds the finished stocking into any suitable receptacle (not
30 shown) or the like.

Preliminary to positioning the stocking into and through the singeing structure, as explained, said stocking is passed between companion brushes 60 and 61 arranged in
35 the path of upward travel of the form. The elements 60 and 61 may be rollers, if desired. One of the rollers 60 (and the smaller of the two) is loosely journaled in a bracket underlying the burner-casing 26. The other and
40 larger roller 61, is likewise journaled in said bracket, and is driven by a belt 62 connecting with the source of power of the machine.

Operation: Assuming that the singeing burners are lighted and that it is desired
45 to subject stockings, or the like, to a singeing, the operator moves the control-lever 8, whereby the band-wheel is clutched to the crank-disk. In the manner already described, this actuates the drive-wheel 20
50 to cause it to have a partial revolution in the direction indicated by the arrow A. Thereby, by means of the strap 21, the cross-head and the stocking-form (with the stocking thereon) are elevated and positioned
55 between the brushing rollers 60 and 61. These serve the dual function of brushing up the fuzz and, also, of acting as a guide for the upper end of the form. The rotation of the brush-roller 61 aids in the
60 fuzz-brushing operation. If desired, this roller may be loosely mounted as is its companion roller. The continued upward movement of the form then positions it in the singeing structure wherein the fuzz is
65 singed off. The further upward movement

of the form then positions it between the snuffing-rollers which are so formed and constructed as to snuff out any ignited part of the surface of the stocking. The form
70 will then move to its limit of upward travel and, thus, will have carried the stocking between the uppermost rollers which then operate to pull it off the form, whereupon, by the aid of the deflecting plate, it is guided
75 onto the conveyer-belt and thence onto the chute. During this entire upward movement of the form and its stocking, the drive-wheel will have been revolving in the direction of the arrow A, as aforementioned. In the interim, the cam 3^a on the periphery
80 of the crank-disk will have caused the operation of the roll-separating mechanism, as already described, and, thus, effected a separation of the snuffing rollers, etc. And this will have been effected just at the moment
85 that the stocking is to be passed between the snuffing rolls and just before it is to be drawn off the form. By this automatic and predetermined separation of the rollers, the stocking-covered form is not
90 made to force the rollers apart because, if it did, the fabric of the stocking (and, especially, if the stocking is of fine goods) would be broken at the toe and the form roughened. As soon as the form has passed
95 between the rollers, they are permitted—by reason of the position of the separating-mechanism, as controlled by the cam on the crank-disk—to close upon the fabric so that, when the hosiery-form begins to move
100 downwardly, the stocking will be held from similarly moving downward with the form; but, under the action of the conveyer-rolls, it is caused to travel upward and, finally, is delivered onto the conveyer. When
105 the form has reached the limit of its upward travel, the rotation of the drive-wheel 20 is reversed and, in revolving in the direction indicated by the arrow B, causes the drive
110 21^a to draw downwardly on the cross-head, and thereby it and the form will be lowered to starting position. The operation is then continued as before.

It will of course be apparent that, instead of moving said hosiery form or carrier, I
115 may make it stationary and move the singeing structure, snuffing device, etc., in relation to it. This can be accomplished by mounting the same so as to slide on said uprights, similarly as does the cross-head
120 and form.

It is a feature of my invention to carry on the operations hereinbefore described by moving the stocking in a substantially vertical plane, as distinguished from the usual
125 manner of doing this, namely, either in a horizontal plane or by a rotary travel of the stocking. By reason of the particular way in which I accomplish these movements, the entire stocking is subjected to the
130

singeing operation and at a predetermined speed.

My machine is, of course, adapted for singeing fabrics other than hosiery and the like.

While I have herein described my invention in detail, it is to be understood that the same is none the less susceptible of variation and modification; and I do not, therefore, limit myself to such details except in so far as they may be specified in the claims.

Having thus described my invention, what I claim is:

1. A machine for singeing hosiery or other fabric including in combination, a base, an upstanding supporting structure mounted thereon, a fabric-carrier slidably mounted on said structure, singeing means disposed in a plane above the base and in the path of the sliding movement of said carrier, and means for elevating said carrier in juxtaposition to said singeing means.

2. A machine for singeing hosiery or other fabric including in combination, a base, an upstanding supporting structure mounted thereon, a fabric-carrier slidably mounted on said structure, singeing means disposed in a plane above the base and in the path of movement of said carrier, a snuffing device arranged in a plane above and in relation to said singeing means, and mechanism for elevating said carrier in juxtaposition to said singeing means and snuffing device.

3. A machine for singeing hosiery or other fabric including in combination, a base, an upstanding supporting structure mounted thereon, a fabric-carrier slidably mounted on said structure, singeing means disposed in a plane above the base and in the path of movement of said carrier, a snuffing device arranged in a plane above and in relation to said singeing means, mechanism for elevating said carrier in juxtaposition to said singeing means and snuffing device, and automatic means disposed in a plane above said base and in approximately vertical alinement with the singeing means and snuffing device for detaching the fabric from said carrier.

4. A machine for singeing hosiery or other fabric including in combination, a base, an upstanding supporting structure mounted thereon, a fabric carrier slidably mounted on said structure, singeing means disposed in a plane above the base and in the path of movement of said carrier, a snuffing device arranged in a plane above and in relation to said singeing means, mechanism for elevating said carrier in juxtaposition to said singeing means, mechanism for elevating said carrier in juxtaposition to said singeing means and snuffing device for detaching the fabric from said carrier.

5. A machine for singeing hosiery or other

fabric including in combination, a base, an upstanding supporting structure mounted thereon, a fabric carrier slidably mounted on said structure, singeing means disposed in a plane above the base and in the path of movement of said carrier, a snuffing device arranged in a plane above and in relation to said singeing means, mechanism for elevating said carrier in juxtaposition to said singeing means and snuffing device, automatic means for detaching the fabric from said carrier, and means for carrying said fabric away from said detaching means.

6. A machine for singeing hosiery or other fabric including in combination, a base, an upstanding supporting structure mounted thereon, a fabric-carrier slidably mounted on said structure, singeing means disposed in a plane above the base and in the path of travel of said carrier, fuzz-raising means disposed in the path of travel of said carrier and in advance of said singeing means, a snuffing device superposed on said supporting structure, means for detaching said fabric from said carrier, and means for elevating said carrier successively in juxtaposition to said fuzz-raising means, to said singeing means, to said snuffing device, and to said fabric-detaching means; said fuzz-raising means, singeing means, snuffing device, and fabric detaching means being arranged in approximately vertical alinement and in planes above said base.

7. A machine for singeing hosiery or other fabric including in combination, a base, an upstanding structure mounted thereon, a fabric-carrier reciprocally mounted on said structure, singeing means disposed above said base and in the path of movement of said carrier, and means for elevating said carrier from a position adjacent said base into juxtaposition to said singeing means.

8. A machine for singeing hosiery or other fabric including in combination, a base, an upstanding supporting structure mounted thereon, a fabric carrier reciprocally mounted on said structure, singeing means disposed in the path of movement of said carrier, intermittently-operating means for elevating said carrier into juxtaposition to said singeing means and for returning it to normal position.

9. A machine for singeing hosiery or other fabric including in combination, a base, an upstanding supporting structure mounted thereon, a fabric carrier mounted on said structure above said base, singeing means also disposed on said supporting structure, and elevating means for changing the relation of said singeing means and carrier.

10. A machine for singeing hosiery or other fabric including in combination, a base, a supporting structure mounted thereon, a fabric carrier reciprocally mounted on said structure, singeing means disposed in a

plane above said base and in the path of movement of said carrier, a snuffing means arranged in juxtaposition to said singeing means, mechanism for automatically actuating said snuffing means, and means for raising said carrier in juxtaposition to said singeing and snuffing means.

11. A machine for singeing hosiery or other fabric including in combination, a base, a supporting structure mounted thereon, a fabric carrier reciprocally mounted on said structure, singeing means also disposed in a plane above said base and thereon and in the path of movement of said carrier, a brushing device disposed in juxtaposition to said singeing means, a snuffing device also arranged in juxtaposition to said singeing means and at the opposite side thereof, and means for detaching the fabric from the carrier; said brushing device, singeing means, snuffing device, and fabric detaching means disposed one above the other and in approximately the same vertical path of movement of the fabric carrier.

12. A machine for singeing hosiery or other fabric including in combination, a base, a supporting structure mounted thereon, a fabric carrier reciprocally mounted on said structure, singeing means also disposed in a plane above said base and thereon and in the path of movement of said carrier, a brushing device disposed in juxtaposition to said singeing means, a snuffing device also arranged in juxtaposition to said singeing means and at the opposite side thereof, and means for automatically detaching the fabric from the carrier; said brushing device, singeing means, snuffing device, and fabric detaching means disposed one above the other and in approximately the same vertical path of movement of the fabric carrier.

13. A machine for singeing hosiery or other fabric including in combination, a base, a supporting structure extending vertically therefrom, a fabric carrier slidably mounted on said structure and adapted to move in a vertical path in relation to said base, a singeing means disposed above said base, and in approximate alinement with the vertical travel of said fabric carrier and means for raising said carrier into juxtaposition with said singeing means.

14. A machine for singeing hosiery or other fabric including in combination, a base, a supporting structure extending vertically therefrom, a fabric carrier slidably mounted on said structure and adapted to move in a vertical path in relation to said base, a singeing means disposed above said base and in approximate alinement with the vertical travel of said fabric carrier, means for raising said carrier into juxtaposition with said singeing means, and a snuffing device disposed above said singeing means and in the path of travel of said carrier.

15. A machine for singeing hosiery or other fabric including in combination, a base, a supporting structure extending vertically therefrom, a fabric carrier slidably mounted on said structure and adapted to move in a vertical path in relation to said base, a singeing means disposed above said base and in approximate alinement with the vertical travel of said fabric carrier, means for raising said carrier into juxtaposition with said singeing means, a snuffing device disposed above said singeing means and in the path of travel of said carrier, and a fabric-detaching device arranged in juxtaposition to said snuffing device and also in the path of travel of said carrier.

16. A machine for singeing fabric including in combination, a base, a supporting structure upstanding therefrom, a fabric-carrier slidably mounted on said structure and adapted to travel in a vertical direction with respect to said base, singeing means arranged in the vertical path of travel of said carrier, and means for elevating said carrier in juxtaposition to said singeing means.

17. A machine for singeing fabric including in combination, a base, a supporting structure upstanding therefrom, a fabric-carrier slidably mounted on said structure and adapted to travel in a vertical direction with respect to said base, singeing means arranged in the vertical path of travel of said carrier, means for elevating said carrier in juxtaposition to said singeing means, and a snuffing device disposed above said singeing means and in the path of travel of said carrier.

18. A machine for singeing fabric including in combination, a base, a supporting structure upstanding therefrom, a fabric-carrier slidably mounted on said structure and adapted to travel in a vertical direction with respect to said base, singeing means arranged in the vertical path of travel of said carrier, means for elevating said carrier in juxtaposition to said singeing means, and an automatically-operated snuffing device disposed above said singeing means and in the path of travel of said carrier.

19. A machine for singeing fabric including in combination, a base, a supporting structure upstanding therefrom, a fabric-carrier reciprocally mounted on said supporting structure and adapted to travel in a vertical direction, singeing means disposed on said supporting structure in a plane above said base and in the path of vertical travel of said carrier, means for elevating said carrier into juxtaposition to said singeing means, and driving mechanism for said elevating means.

20. A machine for singeing fabric including in combination, a base, a supporting structure upstanding therefrom, a fabric-

carrier reciprocally mounted on said supporting structure and adapted to travel in a vertical direction, singeing means disposed on said supporting structure in a plane 5 above said base and in the path of vertical travel of said carrier, means for elevating said carrier in juxtaposition to said singeing means, and constantly-operating driving-mechanism for said elevating means.

10 21. A machine for treating fabric, a base, a supporting structure upstanding therefrom, a fabric carrier movable vertically on said supporting structure and away from said base, singeing means disposed on said 15 supporting structure in a plane above the base and in the path of vertical travel of said carrier, means for elevating said carrier in juxtaposition to said singeing means, and means for stripping the fabric from said 20 fabric carrier, the singeing and stripping operations all being performed in a cycle of

operation in a vertical plane and while the fabric is moving perpendicularly.

22. A machine for treating fabrics including in combination a base, a supporting 25 structure mounted thereon, a single fabric carrier reciprocally mounted on said supporting structure, means for treating said fabric and disposed in the path of movement of said carrier, and stripping means 30 mounted on said supporting structure, the treating and stripping of said fabric being performed in a cycle of operation in one plane and while the fabric is being moved perpendicularly. 35

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE COLLIS.

Witnesses:

MATILDA D. STRUBEL,
BLANCHE KERR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."