

No. 898,019.

L. STOCKER.

PATENTED SEPT. 8, 1908.

MACHINE FOR MAKING MOPS AND BRUSHES.

APPLICATION FILED JULY 5, 1906.

4 SHEETS—SHEET 1.

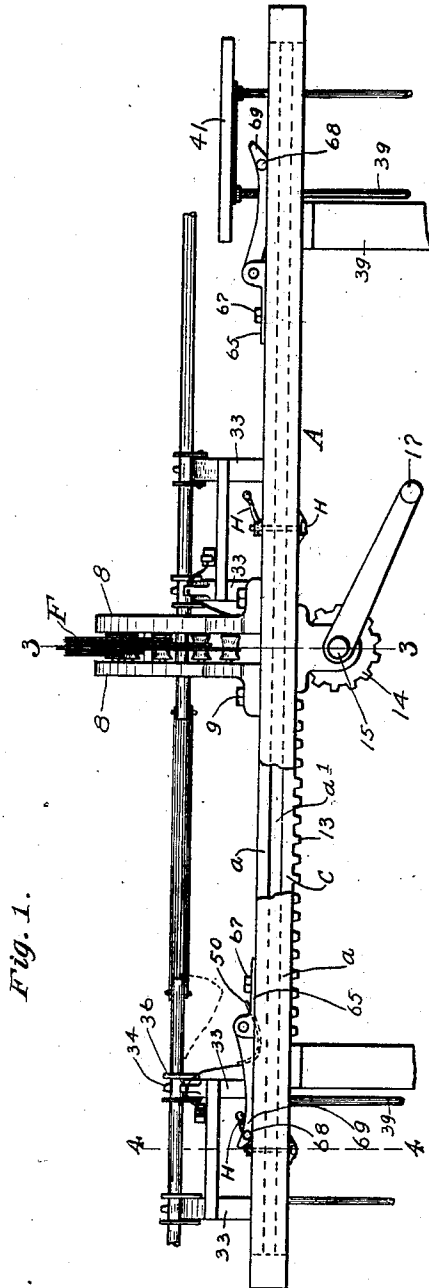


Fig. 1.

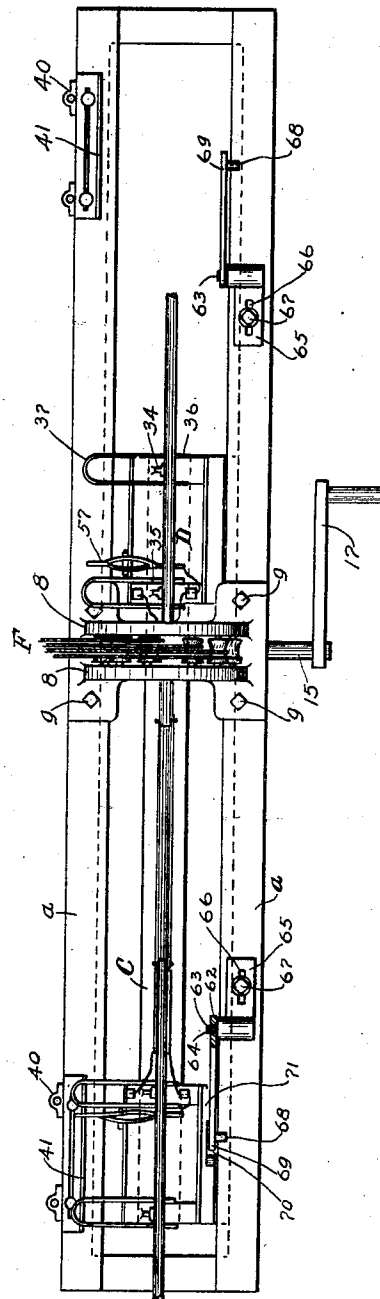


Fig. 2.

Witnesses,  
William Whaley,  
Charles R. Fry

Inventor,  
Louis Stocker  
By Cyrus Koch  
Attorney.

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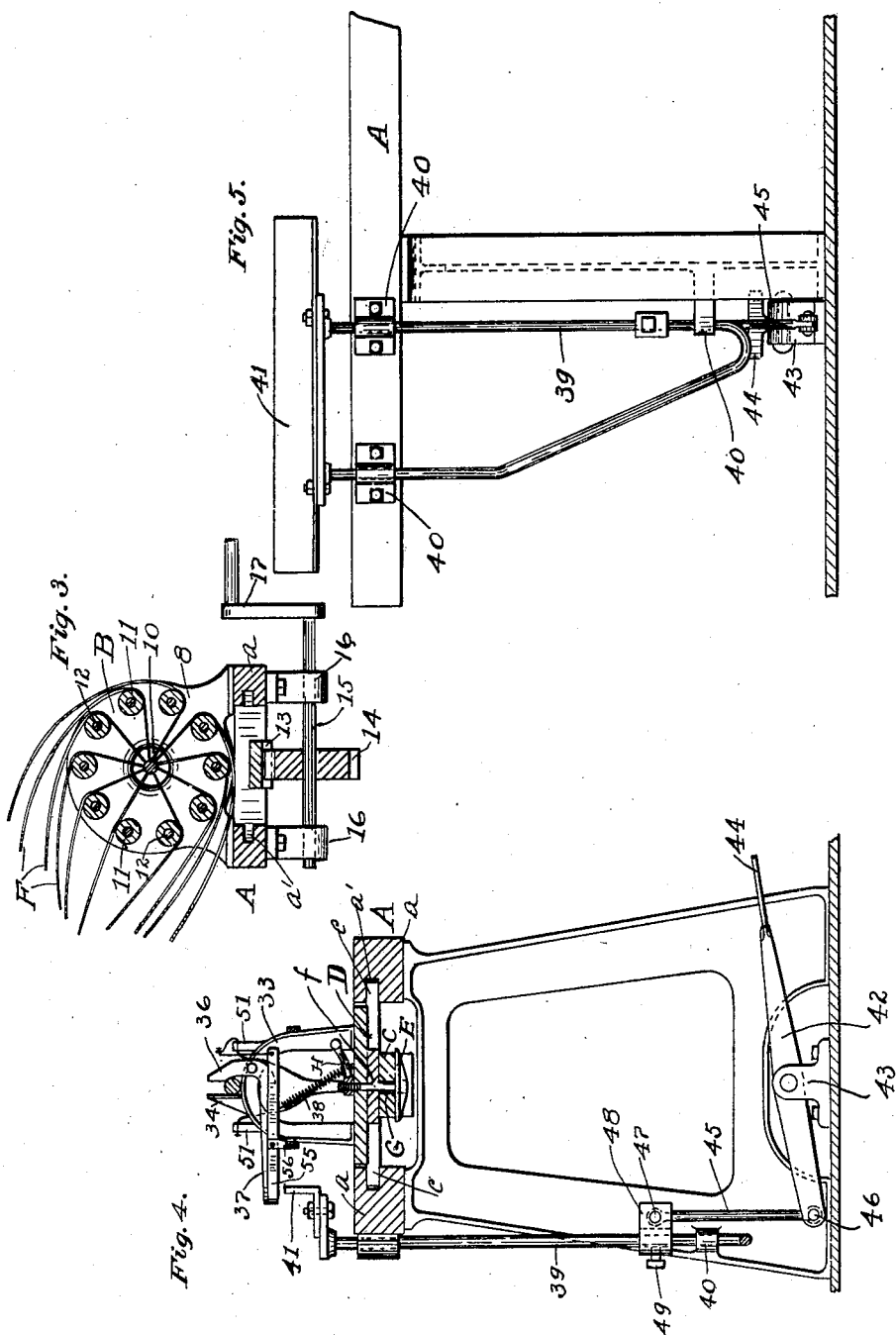
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4 SHEETS—SHEET 2.



Witnesses.

William Whaley.

Carrie A. Logg.

Inventor.

Louis Stocker  
By Cyrus Kehr,  
Attorney.

No. 898,019.

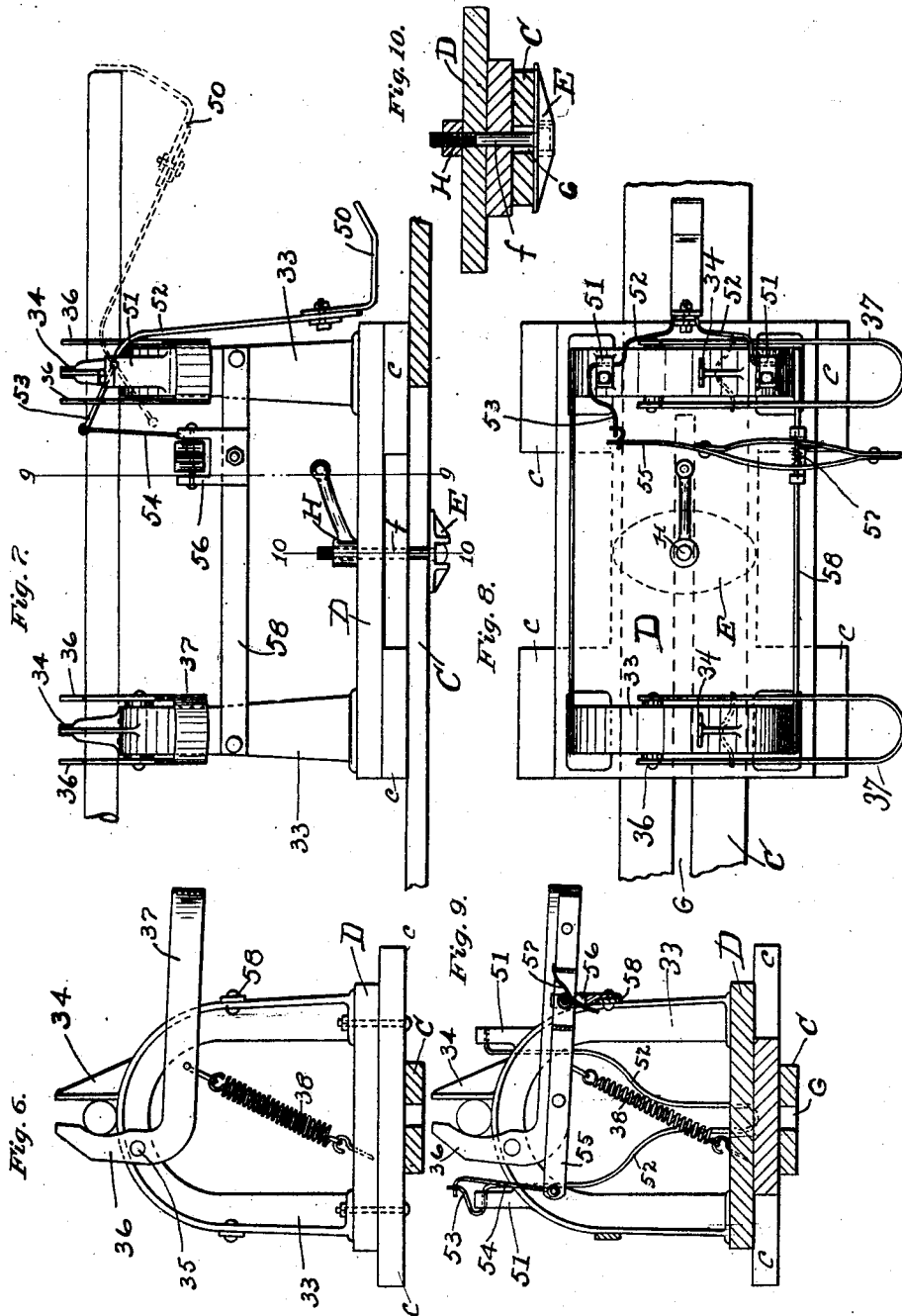
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4 SHEETS—SHEET 3.



WITNESSES  
William Whaley.  
Carrie R. Iry

INVENTOR  
Louis Stocker  
By Cyrus K. Ehr  
Attorney

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4 SHEETS—SHEET 4.

Fig. 11.

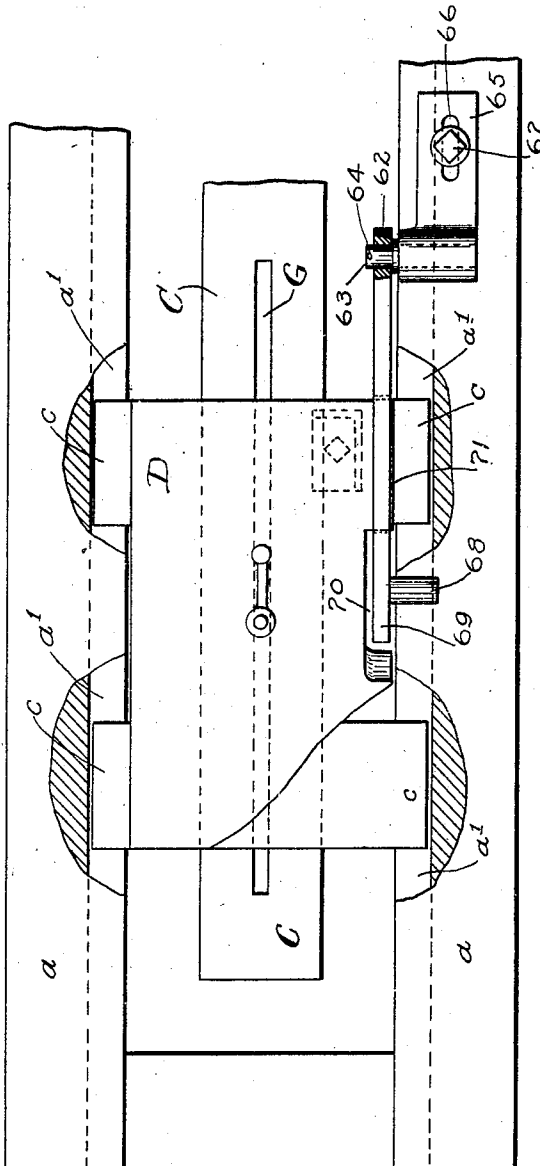
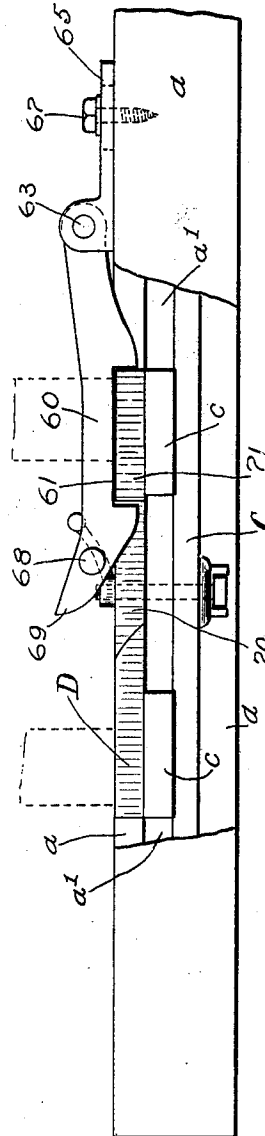


Fig. 12.



Witnesses,  
*Carrie R. Ivy*  
*William Whalley*

Inventor,  
*Louis Stocker*  
*By Cyrus Kehr*  
 Attorney

# UNITED STATES PATENT OFFICE.

LOUIS STOCKER, OF KNOXVILLE, TENNESSEE, ASSIGNOR TO MYER BRIDGES COMPANY, OF LOUISVILLE, KENTUCKY, A CORPORATION.

## MACHINE FOR MAKING MOPS AND BRUSHES.

No. 898,019.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed July 5, 1906. Serial No. 324,860.

*To all whom it may concern:*

Be it known that I, LOUIS STOCKER, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Machines for Making Mops and Brushes, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to machines for making mops and brushes and similar articles, the heads of which are composed of cords, or devices resembling cords; and the invention relates particularly to machines for making such mops or brushes of such cords of indefinite length, a plurality of sections of such cords of approximately even length being applied parallel to each other to a handle.

In the following description, the term, cord or cords will be applied to cords, strings, yarns, wires, straps and any other similar devices or materials suitable for forming the head of a mop or brush.

My improvement is specially applicable to the machine which is the subject-matter of Letters-Patent of the United States No. 842,204, granted to Cyrus Kehr, January 29, 1907, for an improvement in "Machines for making mops and brushes"; and the object of my improvement is to facilitate the placing and engagement of the mop handles in the machine while the head of the mop is being applied to the handles, and the subsequent disengagement of the handles.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying my improvement, the supporting legs being omitted; Fig. 2 is a plan of the same machine; Fig. 3 is an enlarged section on the line 3—3 of Fig. 1; Fig. 4 is an enlarged section on the line 4—4 of Fig. 1; Fig. 5 is an enlarged rear elevation of the right hand portion of the machine as shown in Fig. 1; Fig. 6 is a detail end elevation, Fig. 7 a side elevation, and Fig. 8 a plan of the mechanism for gripping the mop handle; Fig. 9 is a section on the line 9—9 of Fig. 7; Fig. 10 is a section on the line 10—10 of Fig. 7; Fig. 11 is a detail sectional plan illustrating mechanism for locking the carriage; Fig. 12 is a sectional side elevation illustrating the same mechanism.

By way of general description, it may be stated that said machine comprises a stationary base or frame, A, which may be of any desired form and material, and upon

said frame are mounted the operative devices. The functions performed by said operative devices are as follows: Guiding the cords or strands radially to or adjacent to the axial line of the machine, said line being the line with which the axes of the mop or brush handles coincide while said handles are in the machine; temporarily gripping said handles; and longitudinally shifting said handles, for the drawing of said cords and bringing the latter and the handles into proper position for the tying of the cords to the handles and for the severing of the cords when the binding of the latter to one of the handles has been completed. Usually the handles of such mops or brushes are cylindrical, and the cords or strands are arranged concentrically and symmetrically around said handle. But the handle may be of any other desired cross-sectional form, and the cords or strands may be arranged otherwise than concentrically and symmetrically. If the cords are arranged approximately symmetrically and concentrically to the handle axis, the continuous cords must be so guided as to become arranged approximately evenly in an annular or tubular space around the handle axis. And the handle may be of any desired length.

Upon the middle of the frame or base, A, is placed an annular cord guide, B, concentric with the machine axis; and upon said frame or base is mounted a carriage, C, adapted to reciprocate parallel to the machine axis and extending beyond each side of said annular guide, as described in the above mentioned application. Said carriage has its bearings in grooves,  $a^1$ , in the rails,  $a$ , of said frame, A, said carriage comprising laterally directed arms,  $c$ , extending into said grooves. The annular guide, B, is composed of two annular sections, 8, secured to the frame, A, by bolts, 9, at a proper distance from each other to admit the cords, F. Each of said sections has a central horizontal aperture, 10, concentric with the machine axis, and each such aperture is preferably made flaring or funnel-form at both sides. Between the sections, 8, are a group of radial guide members, 11, which are distributed or spaced approximately evenly around the machine axis. The function of said members is to guide the cords, F, radially to the center of the guide, and the number of said members is sufficient to afford an approxi-

mately even radial distribution of said cords approaching the center of said guide. For the sake of reducing resistance to the induction of said cords, said members, 11, may be in the form of rollers mounted rotatably on shafts, 12, the ends of which are supported by said sections, 8. For the reciprocation of said carriage, any desired form of mechanism may be used. The drawings show a cog-rack, 13, applied lengthwise to the lower face of the carriage, C, a pinion, 14, meshing into said rack, a shaft, 15, supporting said pinion and resting in bearings, 16; and having at one end a hand-crank, 17. Any suitable mechanism may be used for firmly securing or locking the carriage when it reaches its limits of movement. Such a locking mechanism is shown in Figs. 11 and 12, and will be hereinafter described.

Upon each end of the carriage is placed a handle support or handle-clamping mechanism. Said mechanism comprises jaws which are located at opposite sides of the machine axis and which are adapted to engage the mop handles. In the form shown in the drawings, one jaw of each pair of jaws is fixed while the other is movable. The jaws which are movable are in operative relation with (1) a lever to be moved by the operator, whereby said jaws are moved away from the opposing jaws, and (2) automatic means for moving said jaws toward the opposing jaws when operation through said lever is terminated, so that the engaging and holding of the handle by said jaws is automatic, while the releasing of said jaws for the discharge and reception of handles is non-automatic or performed by the attendant. Each handle-supporting mechanism is adjustable upon the carriage horizontally and parallel to the machine axis. To provide such adjustability, each such mechanism is mounted upon a base-plate, D, and said plate is set flatwise upon the carriage. A clamping plate, E, is placed beneath the carriage, a clamping bolt, *f*, extends upward through said clamping plate, and longitudinal slot, G, in the carriage, through said base-plate, D, and is surrounded at its upper end by a nut, H. As will be readily understood, said bolt may be loosened and the base-plate, with the mechanism supported thereby, shifted lengthwise of the carriage, and the bolt again tightened so as to fix said base-plate and said mechanism to the carriage in the new position. The right hand of said handle-clamping mechanisms will now be described in detail, it being understood that the mechanism at the left hand end of the machine is identical with that at the right hand end, excepting that the parts are reversed in position, from right to left. Two inverted U-shape standards, 33, rest upon said base-plate, D, parallel to each other and in planes transverse to the machine axis, and directly beneath the ma-

chine axis and away from the latter a distance equal to one-half the diameter of one of the handles, so that a handle may rest upon said standard and at the same time be axially in line with the machine axis. Rearward of the machine axis, a stationary jaw, 34, rises from each such standard in proper position to bear against the handle while the latter is axially in line with the machine axis. Pivoted to the front portion of said standard at 35 is a bell-crank lever, 36, 37, the number 36 designating an upright arm and the number 37 designating a horizontal arm of said bell-crank, said upright arm constituting a jaw standing in front of the axial line of the machine in proper position to bear against the front of the handle.

A contracting coiled spring, 38, is joined by its upper end to the arm, 37, and by its lower end to the base-plate, D, so as to normally draw said arm, 37, downward and tilt said bell-crank so as to press the jaw-arm, 36, toward the stationary jaw, 34. Preferably two such bell-cranks are applied to each standard, 33, one at the right and one at the left of said standard, the pair being integral, being formed of a single bar of metal bent into U-form, as shown by the drawings (Figs. 7 and 8). Obviously, the jaws, 36, may be moved forward manually or by any suitable mechanical devices placed in suitable operative relation with said jaws. For the releasing of said jaws, the drawings show a pedal mechanism. Since the handles at the right hand side of the annular cord guide, B, are inserted and removed only when the carriage is at its right hand limit of movement, said pedal mechanism need be in operative relation with said movable jaws only when the carriage is at such limit of movement. Hence said pedal mechanism may be secured to the frame of the machine and not to the carriage, so that it will not travel to the right and left with the carriage. Said pedal mechanism comprises an upright reciprocatory member, 39, located at the rear of the frame of the machine and supported in guides, 40. To the upper end of said member, 39, is secured a bar, 41, which is horizontal and parallel to the machine axis and normally extends to the level of the lower face of the rear ends of the bell-crank arms, 37, when a handle is located between the jaws, 34 and 36, and said horizontal arm, 37, is raised to the extent due to the forward movement of the jaw, 36, by the insertion of the handle. The bar, 41, is to be regarded as a part of the member, 39, and said bar and the upright portions of said member may be integral.

Adjacent the lower portion of the member, 39, a pedal lever, 42, is pivoted between its ends to a support, 43, the pedal end, 44, of said pedal lever extending forward into convenient position for the attendant, while the rear end of said pedal lever is suitably coupled

to the lower portion of said member, 39. In the form shown in the drawings, this is done by means of a supplemental link, 45, the lower end of which is joined to said pedal lever at 46 while its upper end is pivoted at 47 to a block, 48, surrounding one of the upright bars of the member, 39, and secured thereto by means of a set-bolt, 49.

The operation of said handle-supporting mechanism is as follows: If the carriage is not at its right hand limit of movement and no handle is in position between the jaws of said mechanism, said jaws are separated manually and a handle placed into position. This is done to raise the lower ends of the arms, 37, of the bell-cranks so that when the carriage is moved to its right hand limit, the arms, 37, will pass above the bar, 41, said bar being long enough to extend beneath both arms, 37. Obviously, the rear ends of said arms may be in any other manner raised so as to clear said bar. When said arms are once in position above said bar, said bar may be raised for the tilting of said bell-cranks and the placing of said handle at the proper distance from the longitudinal middle of the carriage or the insertion of another handle. When the pressure of the foot is removed from the pedal, 44, the member, 39, and the bar, 41, will descend by gravity and each bell-crank will be reversed (with reference to the movement imparted thereto by the bar, 41) by the action of the contracting springs, 38, whereby the jaws, 36, will press the handle against the jaws, 34, and grip said handle until said bar, 41, is again raised, which is done after the carriage is moved to its left hand limit and again returned to its right hand limit. The bar, 41, is also long enough to extend beneath the arms, 37, when the base-plate, D, and the mechanism supported thereby are shifted longitudinally upon the carriage.

To facilitate the placing of the handles at the proper distance from the longitudinal middle of the carriage, a suitable stop or gage against which one end of the handle may abut should be provided. In the machine described by the above mentioned patent, such a standard is located in proper position to form an abutment for the end of the handle which is the farther from the longitudinal middle of the carriage. Such a standard, so located, is satisfactory when all the handles are of the same length; but if there are slight variations in the length of the handles, the handles are secured to the carriage at varying distances from the longitudinal middle of the carriage. To insure the placing of all the handles at exactly the same distances from the longitudinal middle of the carriage, I have applied a gage stop, 50, to constitute an abutment for the end of the handle which is directed toward the middle of the carriage. But a gage which forms

an abutment at that end of the handle must be removed away from the handle after the latter has been secured in position and approaches the annular cord guide. To meet this requirement, I have hinged said gage, 50, to the left hand standard, 33, in ears, 51, rising from said standard, the upper portion of said gage being forked, and one arm, 52, of the fork extending to one of said ears and the other arm, 52, to the other of said ears. One of said arms has an extension, 53, reaching through and beyond the adjacent ear, 51, and extending to the side of said standard opposite said gage, so that said arm will constitute a crank, the downward movement of which will cause the upward movement of the gage. From said crank arm a link, 54, extends downward and is coupled by its lower end to a horizontal lever, 55, which lever is pivoted to a standard, 56, in proper position to bring the lower face of its free end into line with the lower faces of the outer ends of the arms, 37, so that said lever, 55, will be tilted synchronously with the levers, 37—36. A torsional spring, 57, is applied to the lever, 55, and the standard, 56, in such manner as to normally raise the end of said lever to which the link, 54, is coupled, so that when the outer end of said lever, 55, is not engaged by the bar, 41, said lever will be tilted so as to push said link, 54, and the crank arm, 53, upward and the gage, 50, downward into the position shown in Fig. 7. The standard, 56, is supported by a horizontal bar, 58, extending from one standard, 33, to the adjacent standard.

From the foregoing description it will be understood that when the bar, 41, is pressed upward, the jaws, 36, and the gage, 50, are actuated synchronously, said jaws moving away from the opposing jaws, 34, and the gage, 50, swinging upward to or adjacent to the axis of the machine so as to form an abutment for the end of the handle. And it will be observed that when said bar, 41, is allowed to descend, said jaws, 36, and said gage move synchronously in reverse directions, the jaws, 36, moving toward the opposing jaws, 34, and bearing against the handle, while the gage, 50, moves downward away from the end of the handle; and both of these latter movements are produced by the springs above described. Thus the handle-clamping mechanism is put out of action and the gage put into action by means of non-automatic lever mechanism—to-wit, pedal mechanism; while said clamping mechanism is put into action and said gage put out of action through the operation of automatic mechanism.

Referring now to Figs. 11 and 12, 60 is a gravity pawl hinged to a plate, 65, which is secured to the top of one of the side rails, *a*. Said pawl is arranged parallel to said side rail and extends normally into the path of the

adjacent base plate, D, which supports the handle-clamping mechanism as above described. Said base plate is cut away at 70 leaving a portion, 71, to be engaged by said pawl, the latter having a notch, 61, of proper form to receive said portion, 71, when the movement of the carriage brings said portion, 71, beneath said notch, the weight of said pawl causing the latter to descend. At its end adjacent the plate, 65, said pawl has a horizontal bearing, 62, into which extends a journal, 63, from said plate, and a cotter pin, 64, extends through the outer end of said journal to keep said pawl in position. Said plate, 65, has a longitudinal upright slot, 66, through which a binding bolt, 67, extends into the adjacent portion of the adjacent side rail, *a*. Said slot permits the longitudinal shifting of said plate for the longitudinal adjustment of said locking pawl. A lug, 68, extends laterally from the locking pawl across a portion of the upper face of said side rail at a proper elevation to limit the downward movement of the pawl when the carriage is moved away from the pawl. The free end, 69, of the pawl is preferably upturned to constitute a handle for the manual disengagement of the pawl when the carriage is to be shifted. As will be readily understood, when the base plate, D, approaches the pawl, the latter is engaged and pressed upward until the portion, 71, of the base plate is beneath the notch, 61, whereupon the pawl will fall and engage said portion, 71, at each side of the latter, so that the carriage is locked against movement in either direction. A similar locking mechanism is to be applied at the opposite end of the machine; but I deem it unnecessary to make duplicate drawings and description therefor.

I claim as my invention:

1. In a machine for making mops and brushes, the combination with a handle support, of an abutment gage disposed adjacent one end thereof normally out of alinement with a handle in said support and movable into alinement therewith.

2. In a machine for making mops and brushes, the combination with a handle support, of an abutment gage disposed adjacent one end thereof and normally out of alinement with a handle in said support, and mechanism for moving said gage into alinement therewith.

3. In a machine for making mops and brushes, the combination with a handle support, of a pivoted abutment gage normally out of alinement with a handle in said support and movable into alinement therewith.

4. In a machine for making mops and brushes, the combination with a handle support, of a pivoted abutment gage normally out of alinement with a handle in said support, mechanism for moving said gage into

alinement therewith, and means acting on said mechanism for automatically moving said gage out of such alinement.

5. In a machine for making mops and brushes, the combination with a handle support, of a pivoted abutment gage normally out of alinement with a handle in said support; mechanism for moving said gage into alinement therewith, and a spring acting upon said mechanism for moving said gage out of such alinement.

6. In a machine for making mops and brushes, the combination with a handle support, of a pivoted abutment gage normally out of alinement with a handle in said support and movable into alinement therewith, a horizontal lever coupled to said gage, and a spring applied to said lever.

7. In a machine for making mops and brushes, the combination with a handle support, of a pivoted abutment gage disposed adjacent one end thereof and normally out of alinement with a handle in said support, mechanism for moving said gage into alinement therewith, a pedal mechanism acting upon said moving mechanism, and means acting on said moving mechanism for automatically shifting said gage out of such alinement.

8. In a machine for making mops and brushes, the combination with a handle support, of a pivoted abutment gage disposed adjacent one end thereof and normally out of alinement with a handle in said support, mechanism for moving said gage into alinement therewith, a pedal mechanism acting on said moving mechanism, and a spring acting on said moving mechanism for shifting said gage out of such alinement.

9. In a machine for making mops and brushes, the combination with a handle support, of an abutment gage disposed adjacent one end thereof and normally out of alinement with a handle in said support, mechanism for moving said gage into alinement therewith, a reciprocating member having a connection for moving said mechanism, a pedal for operating said member, and means acting on said mechanism for moving said gage out of such alinement.

10. In a machine for making mops and brushes the combination of a support having handle clamping members, means for yieldingly closing said members, and an abutment gage disposed at one end of said members normally out of alinement with the jaws thereof and movable into alinement therewith.

11. In a machine for making mops and brushes, the combination of a support having handle clamping members, means for yieldingly closing said members, an abutment gage disposed at one end of said members normally out of alinement with the jaws



thereof and movable into alinement therewith, and mechanism for opening said members.

12. In a machine for making mops and brushes, the combination of a support having handle clamping members, means for yieldingly closing said members, an abutment gage disposed at one end of said members normally out of alinement with the jaws thereof and movable into alinement therewith, and a pedal mechanism for opening said members.

13. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, handle clamping members upon said carriage, means for yieldingly closing said members, an abutment gage disposed adjacent one end of said members and normally out of alinement with a handle therein, means for moving said gage into alinement therewith, mechanism for opening said members, and a pedal mechanism acting upon said opening mechanism and disposed in alinement therewith at a point in the carriage travel.

14. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, handle clamping members supported upon said carriage, and mechanism stationary relative to the travel of said carriage and adapted to open said clamping members.

15. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, handle clamping members supported upon said carriage, mechanism stationary relative to the travel of said carriage and adapted to open said clamping members, and means for yieldingly closing said members.

16. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, handle clamping members supported upon said carriage, means for yieldingly closing said members, a vertically reciprocable member disposed adjacent the path of said clamping members and stationary relative to the travel of said members with the carriage, and a pedal for operating said reciprocable member.

17. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, a handle clamping mechanism supported upon said carriage, a handle gage supported upon said carriage at one end of said mechanism, means for moving said gage into operative position, and means fixed relative to the travel of the carriage and having a connection for acting upon said means for moving said gage into operative position.

18. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, a handle clamping

mechanism supported upon said carriage, a handle gage supported upon said carriage at one end of said mechanism, means for moving said gage into operative position, means fixed relative to the travel of the carriage and having a connection acting upon the means for moving said gage into operative position, and means acting upon said gage moving means for shifting said gage out of operative position.

19. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, handle clamping members upon said carriage, a handle gage supported upon said carriage at one end of said members and movable into and out of operative position, means for opening said clamping members, and means for moving said gage into operative position.

20. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, handle clamping members upon said carriage, a handle gage supported upon said carriage at one end of said members and movable into and out of operative position, means for opening said clamping members, means for moving said gage into operative position, and means fixed relative to the travel of the carriage and having a connection for simultaneously operating said means for actuating the clamping members and gage.

21. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, handle clamping members upon said carriage, a handle gage supported upon said carriage at one end of said members and movable into and out of operative position, means for closing said clamping members, a vertically reciprocable member relatively fixed to the carriage travel for opening said clamping members, and a pedal for operating said reciprocable member.

22. In a machine for making mops and brushes the combination of a frame, a carriage mounted thereon, a handle clamping mechanism having a support longitudinally adjustable upon said carriage, and means fixed relative to the travel of the carriage for operating said clamping mechanism.

23. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, a handle clamping mechanism and handle gage supported upon said carriage, means for adjusting said mechanism and gage longitudinally upon said carriage, and an operating mechanism relatively fixed to the travel of the carriage and having a connection to actuate both the clamping mechanism and gage.

24. In a machine for making mops and brushes, the combination of a frame, a carriage mounted thereon, a handle clamping

mechanism and handle gage supported upon said carriage, means for adjusting said mechanism and gage longitudinally upon said carriage, means for closing said clamping mechanism, and means fixed relative to the carriage travel for opening said clamping mechanism.

25. In a mop making machine, a frame, a cord guide mechanism carried thereby, a carriage provided with a support, handle clamping members upon said support, means upon said carriage for automatically closing said members, and manually operated means fixed relative to the carriage travel for opening said clamping members.

26. In a mop making machine, a frame, a carriage mounted thereon and provided with a plurality of handle clamping members, a cord guiding mechanism mounted upon the frame intermediate of said members, means for actuating said carriage, and means fixed relative to the carriage travel for operating the clamping members upon the carriage.

27. In a mop making machine, the combination of a frame, a carriage mounted to travel thereon, a plurality of handle clamping devices adjustable toward and from each other upon said carriage, a relatively stationary cord guiding mechanism located upon said frame intermediate said clamping devices, and means at each end of the frame fixed relative to the carriage travel for operating the clamping devices upon said carriage.

28. In a mop making machine, the combination of a frame, a carriage mounted to travel thereon, a plurality of handle clamping devices adjustable toward and from each other upon said carriage, a relatively stationary cord guiding mechanism located upon said frame intermediate said clamping devices, and means fixed relative to the carriage travel for operating said clamping devices.

29. In a mop making machine, a handle clamping device comprising a standard having a fixed jaw thereon, an opposite pivoted jaw, and a tension device connected to the pivoted jaw for moving it toward the fixed jaw.

30. In a mop making machine, a frame, a handle clamping device comprising a standard having a fixed jaw thereon, an opposite pivoted jaw, a tension device connected to the pivoted jaw for moving it toward the fixed jaw, and a pedal mechanism for moving said pivoted jaw.

31. In a mop making machine, a frame, a handle clamping device comprising a standard having a fixed jaw thereon, an opposite pivoted jaw, a tension device connected to

the pivoted jaw for moving it toward the fixed jaw, a reciprocatory bar provided with a longitudinally extending bar disposed beneath the pivoted jaw, and a pedal for moving said reciprocatory bar.

32. In a mop making machine, a frame, a handle clamping device comprising a standard having a fixed jaw thereon, an opposite pivoted jaw, a tension device connected to the pivoted jaw for moving it toward the fixed jaw, a reciprocatory bar provided with a longitudinally extending bar disposed beneath the pivoted jaw, a pedal for moving said reciprocatory bar, a pivoted gage carried by said standard, and an operating lever for said gage disposed in the path of said longitudinal bar.

33. In a mop making machine, a frame, a handle supporting standard carried thereby, a pivoted gage mounted at one end of said standard, an actuating lever connected to said gage, and a restoring spring carried by said lever.

34. In a mop making machine, a frame, a carriage supported to travel thereon, a vertically reciprocating member located at one end of said frame, a longitudinally extending bar carried by said member, and a handle clamping mechanism upon the carriage disposed to be engaged by said bar.

35. In a mop making machine, a frame, a carriage supported to travel thereon, a vertically reciprocating member located at one end of said frame, a longitudinally extending bar carried by said member, a handle clamping mechanism upon the carriage disposed to be engaged by said bar, a treadle connection with said reciprocatory member, and a locking mechanism to retain said carriage when in alinement with said bar.

36. In a mop making machine, a frame, a handle supporting standard carried thereby and provided with a fixed jaw, a bifurcated movable jaw embracing said standard and pivoted thereto, and means for drawing said jaws toward each other.

37. In a mop making machine, a frame, a handle supporting standard carried thereby and provided with a fixed jaw, a bifurcated movable jaw pivoted to said standard and having an angle arm, and a tension spring connected to said arm and to a fixed part.

In testimony whereof I have signed my name, in presence of two witnesses, this 23rd day of June, in the year one thousand nine hundred and six.

LOUIS STOCKER.

Witnesses:

CYRUS KEHR,  
C. A. MORSE.