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PATENTED JAN. 29, 1907.

C. KEHR.

MACHINE FOR MAKING MOPS AND BRUSHES.

APPLICATION FILED JAN. 12, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

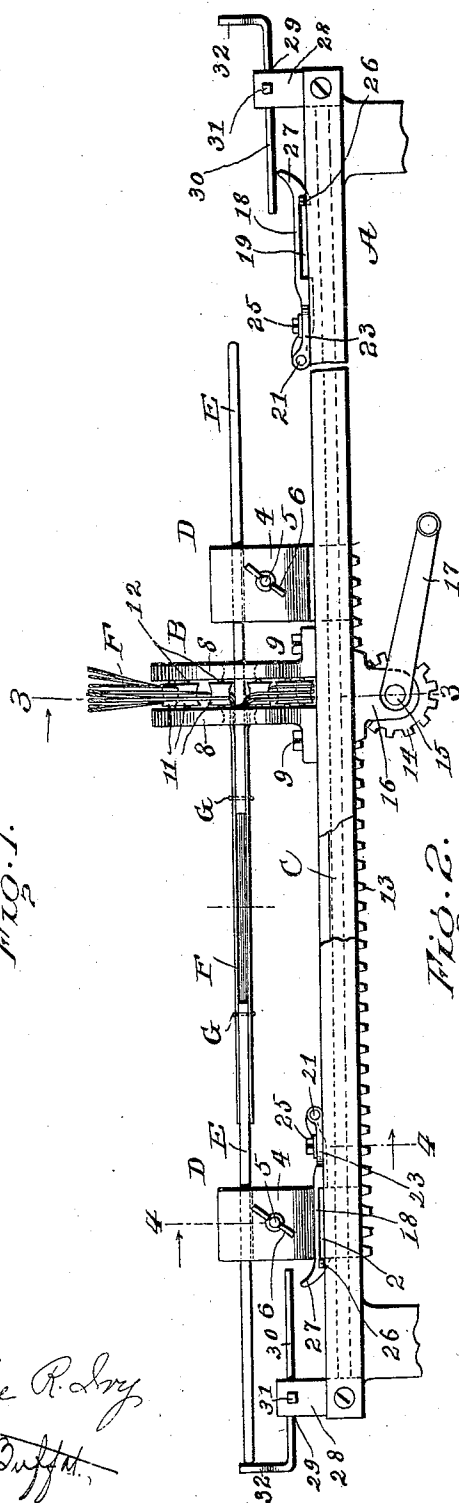
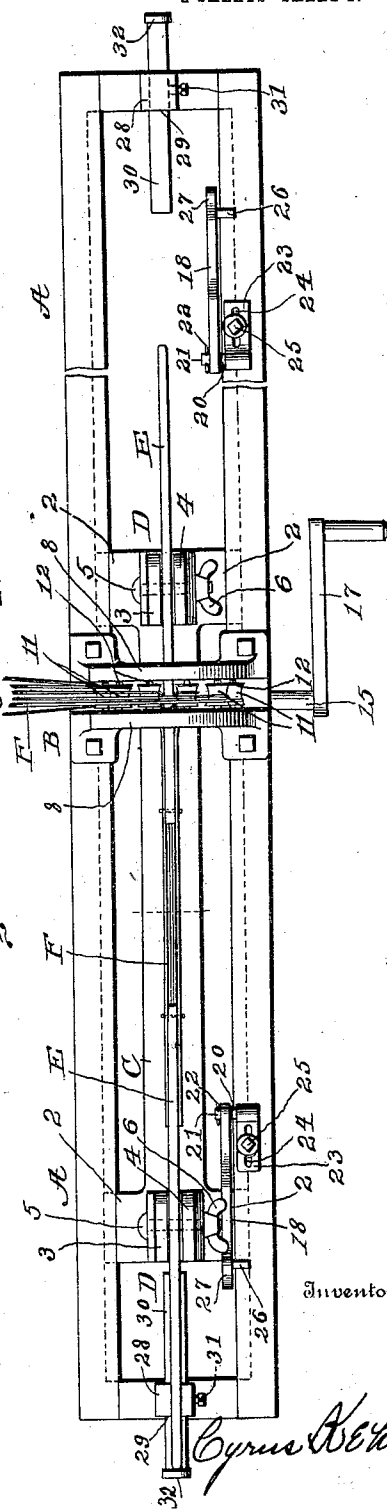


FIG. 2.



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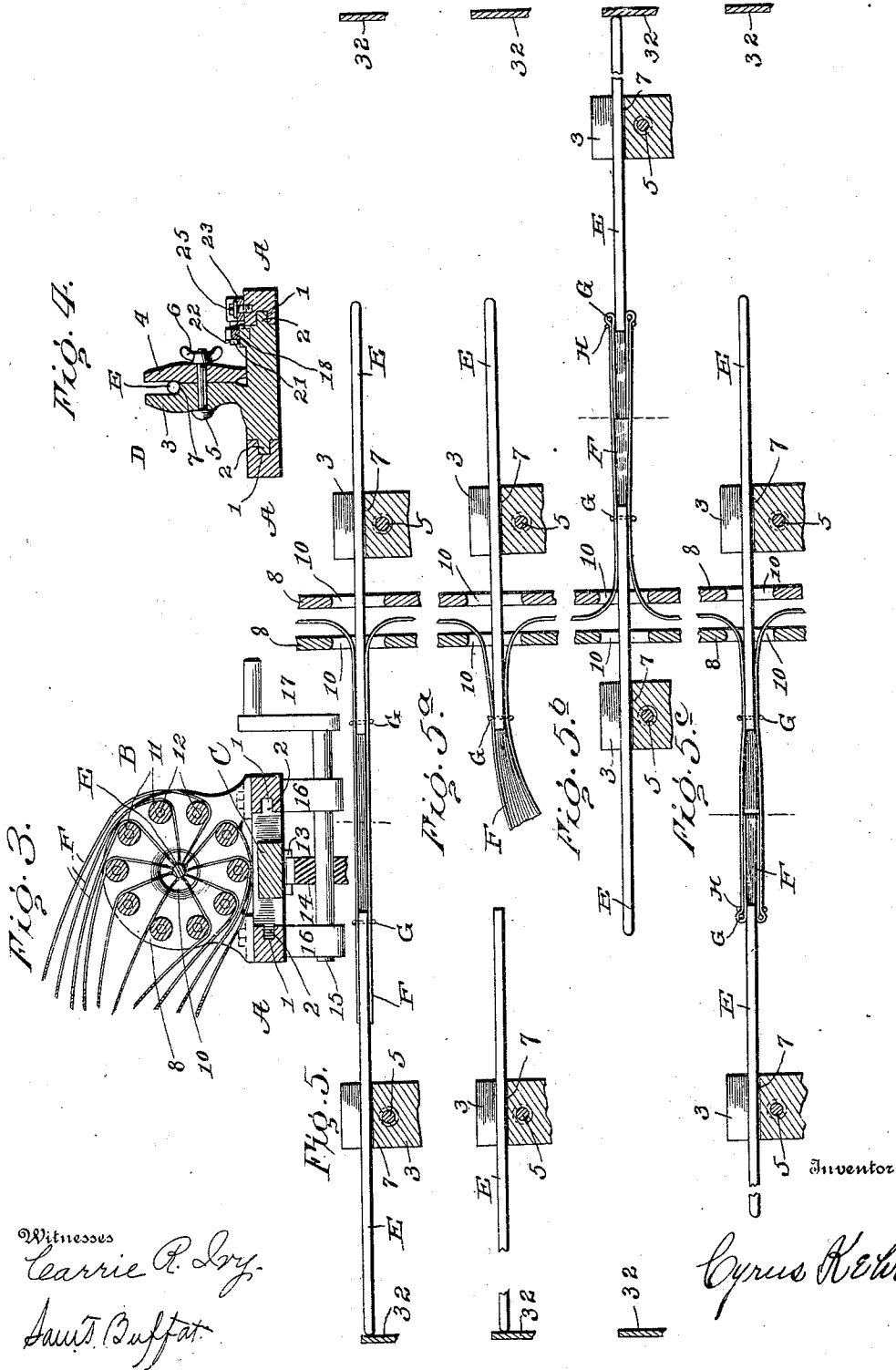
Inventor

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MACHINE FOR MAKING MOPS AND BRUSHES.

APPLICATION FILED JAN. 12, 1905.

2 SHEETS—SHEET 2.



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MACHINE FOR MAKING MOPS AND BRUSHES.

No. 842,204.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CYRUS KEHR, 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 drawings.

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.

The object of my invention is to produce a machine which shall facilitate the making of such mops or brushes, it being obvious that economy will result from performing a considerable portion of the operation mechanically instead of manually.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying my improvement. Fig. 2 is a plan of the same machine. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is a section on the line 4 4 of Fig. 1. Figs. 5, 5^a, 5^b, and 5^c are upright longitudinal detail sections illustrating different stages of the operation of the machine.

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 han-

dles 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. Upon each end of said carriage is placed a suitable handle-support. Said support may be in the form of a clamp, the jaws of which are parallel with and at opposite sides of the machine-axis. The function of said support is to hold two handles E with their axes lying in the machine-axis and with their base ends directed toward each other and to reciprocate said handles (when the carriage is reciprocated) for the drawing of the cords F through said guide and for the binding of said cords to said handles. Upon each end of the frame A is a stop or gage standard to aid in the placing of the handles.

In detail the construction of said machine in the particular form shown in the drawings is as follows: The frame A has opposing longitudinal channels 1. The carriage has lateral feet 2, which extend loosely into said channels. The clamps D consist of a fixed jaw 3 and a movable jaw 4 and a bolt 5, extending transversely through said jaws and having a thumb-nut 6 for binding said jaws to each other. The stationary jaw is provided with a shoulder 7 at a proper elevation to support a mop-handle before said jaws are closed. 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
 5 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,
 10 and the number of said members is sufficient to afford an approximately 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
 15 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
 20 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.

25 To positively secure the carriage at each limit of its travel, a suitable locking mechanism is used. This is preferably automatic. For this purpose the drawings show at each end of the machine a gravity-pawl 18, hinged
 30 to a plate 23, which plate is secured to the top of the frame A. Said pawl is arranged parallel to one of the side rails of the frame A and extends normally into the path of the adjacent foot 2 of the carriage and has a
 35 notch 19 of proper form to receive said foot when the movement of the carriage brings said foot beneath said notch, the weight of said pawl causing the latter to descend. At its end adjacent the plate 23 said pawl has a
 40 horizontal bearing 20, into which extends a journal 21 from said plate, and a cotter-pin 22 extends through the outer end of said journal to keep said pawl in position. Said plate 23 has a longitudinal upright slot 24,
 45 through which a binding-bolt 25 extends into the adjacent portion of the frame A. Said slot permits the longitudinal shifting of said plate for the longitudinal adjustment of said locking-pawl. A lug 26 extends laterally
 50 from the locking-pawl across a portion of the upper face of the frame A at a proper elevation to limit the downward movement of the pawl when the carriage is moved away from the latter. The free end 27 of the pawl is
 55 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 foot of the carriage approaches the pawl the latter is en-
 60 gaged and pressed upward until the foot is beneath the notch 19, whereupon the pawl will fall and engage the foot at each side of the latter, so that the carriage is locked against movement in either direction. Such
 65 locking is important because it compels the

carriage to assume and maintain precise positions during the operation of binding and severing the cords F.

At each end of the machine a stop or gage
 70 standard 32 rises into the axial line of the machine in proper position to meet the outer end of the adjacent handle E when the latter has been placed into the machine. In other words, when a handle is to be placed into the machine after the operation has been estab-
 75 lished the outer end of the handle is pressed against said stop or gage, and is thereby placed at the proper distance from the opposite end of the carriage. The drawings show
 80 said standard rising from a shaft 30, which is horizontal and parallel to the machine-axis and extends through an aperture 29 in a column 28, rising from the frame A, said shaft 29 being secured in said aperture by set-bolts
 85 31. By loosening said set-bolt said shaft 30 may be moved longitudinally for the adjustment of said standard 32 with reference to the carriage, whereby said standard is adapted to handles of different lengths or to set the handles for making mops comprising longer
 90 or shorter cord-sections.

The operation of the machine is as follows: The carriage being placed midway between its limits of travel a handle E is placed into
 95 each of the clamps D, the base ends of said handles being directed toward each other and equidistant from a plane extending midway between the sections of the annular guide B (which is midway between the limits
 100 of travel of the carriage) and separated from said plane a distance equal to the distance the cord-sections in the finished mop are to extend beyond the base end of the handle. Then the carriage is shifted to one of its limits—for example, its left-hand limit. Such
 105 movement should be sufficient to bring the base end of the right-hand handle through the annular guide far enough to make it accessible for applying the inner band G around said handle and the cords surrounding the han-
 110 dle. The cords are then led from any suitable source to and over the radial guide members 11 and thence between the sections 8 of said annular guide B and through the central aperture 10 of the left-hand section 8, thence
 115 along the right-hand handle across the gap between said handles and along the left-hand handle a distance equal to the distance the cords in the finished mop are to extend below the handles plus the distance from the base
 120 end of said handle to the plane in which said cords are bound to said handle by the inner band G plus a short distance to be allowed for the folding of the cords around or over said inner band. When all of said cords are
 125 thus arranged around and parallel to said handles, an inner band G is placed around said cords adjacent to the base end of each handle. Then the cords are cut transversely
 130 midway between the adjacent ends of said

handles. The left-hand handle is now removed from its clamp D and with the base end directed downward, so that the portions of the cords above said inner band will hang downward. An outer band H is placed around said cords and handle adjacent to the inner band G, whereby the first mop is completed. A new handle is now put into the place of the one just removed. Then the carriage is shifted to the right, so as to extend beyond the annular cord-guide B as far as it extended to the left of said guide. By this movement both handles are carried to the right, the right-hand handle coming entirely out of the guide B and drawing all the cord ends attached thereto to the right-hand side of said guide and doubling upon or inverting them with reference to said handle and turning them across the band G on said handle, and the left-hand handle is extended through said guide as far as the right-hand handle extended to the opposite side of said guide. (Far enough to be accessible for applying the inner band G to said handle.) Now an inner band G is applied around the base end of the left-hand handle and the cords surrounding said handle and an outer band H is placed around the base end of the right-hand handle and the doubled cords surrounding said end. Then the cords are severed midway between the ends of said handles and the right-hand handle is released from its clamp and removed, said handle and the cord-sections and the two bands thereto attached constituting a finished mop. It will be observed that prior to the last severing of said cords the cord ends were bound to the left-hand handle, and such binding may be used for the drawing of said cords toward and through the annular guide. A new handle is now placed into the right-hand clamp in the same position as before and the carriage is shifted to the left-hand limit, whereby the cords are inverted upon the left-hand handle and brought around the right-hand handle in position for the application of an inner band to the right-hand and an outer band to the left-hand handle and for the severing of the cords, the latter step completing a cycle of steps and completing a mop at the left-hand end of the machine. The operation is continued indefinitely by repeating the foregoing cycles.

If so desired, the new handle may be inserted after the carriage has been shifted. If so desired, the work may be performed without reciprocating the handle-supports. For example, the handle-supports may be used merely for the proper placing or guiding of the handles until they are secured to the cords by the inner bands G and then the handles may be pulled endwise by hand. The central apertures 10 may serve as a guide for the base ends of the handles during a portion of the operation.

I claim as my invention—

1. In a machine, for making mops and brushes, a cord-guide having radial and axial passage-ways, substantially as described.
2. In a machine for making mops and brushes, a two-section annular cord-guide the sections whereof have a central aperture of sufficient diameter to permit the simultaneous passage of a handle and cords, substantially as described.
3. In a machine for making mops and brushes, the combination of a two-section annular cord-guide, the sections whereof have a central aperture of sufficient diameter to permit the simultaneous passage of a handle and cords, and radial guide members surrounding the axis of said cord-guide, substantially as described.
4. In a machine for making mops and brushes, a cord-guide having radial and axial passage-ways, and a handle-support at each side of said guide, substantially as described.
5. In a machine for making mops and brushes, a two-section annular cord-guide the sections whereof have a central aperture of sufficient diameter to permit the simultaneous passage of a handle and cords, and a handle-support at each side of said guide, substantially as described.
6. In a machine for making mops and brushes, the combination of a two-section annular cord-guide, the sections whereof have a central aperture of sufficient diameter to permit the simultaneous passage of a handle and cords, radial guide members surrounding the axis of said cord-guide, and a handle-support at each side of said guide, substantially as described.
7. In a machine for making mops and brushes, a cord-guide having radial and axial passage-ways, and a handle-gage at each side of said guide, substantially as described.
8. In a machine for making mops and brushes, a two-section annular cord-guide the sections whereof have a central aperture of sufficient diameter to permit the simultaneous passage of a handle and cords, and a handle-gage at each side of said guide, substantially as described.
9. In a machine for making mops and brushes, the combination of a two-section annular cord-guide, the sections whereof have a central aperture of sufficient diameter to permit the simultaneous passage of a handle and cords, and radial guide members surrounding the axis of said cord-guide, and a handle-gage at each side of said guide, substantially as described.
10. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, and a handle-support at each side of said guide, said handle-supports and said annular guide being relatively shiftable, substantially as described.
11. In a machine for making mops and

brushes, the combination with a frame, of an annular cord-guide, and a handle-clamp at each side of said guide, said handle-clamps and said annular guide being relatively shift-
5 able, substantially as described.

12. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage, and a handle-support upon said carriage at
10 each side of said guide, substantially as described.

13. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage,
15 and a handle-clamp upon said carriage at each side of said guide, substantially as described.

14. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, radial cord-guides, a han-
20 dle-support at each side of said annular guide, said handle-supports and said annular guide being relatively shiftable, substantially as described.

15. In a machine for making mops and brushes, the combination with a frame, of an annular guide, radial guide members, and a
25 handle-clamp at each side of said guide, said handle-clamps and said annular guide being relatively shiftable, substantially as described.

16. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, radial guide
35 members, a carriage, and a handle-support mounted upon said carriage at each side of said annular guide, substantially as described.

17. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, radial guide
40 members, a carriage, and a handle-clamp mounted upon said carriage at each side of said annular cord-guide, substantially as described.

18. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide comprising two sections,
50 8, radial guide members located between said sections, a handle-support at each side of said annular guide, said handle-supports and said annular guide being relatively shiftable, substantially as described.

19. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide comprising two sections,
55 8, radial guide members located between said sections a handle-clamp at each side of said annular guide, said handle-clamps and said annular guide being relatively shiftable, substantially as described.

20. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide comprising sections, 8,

radial guide members located between said
65 sections, shafts extending through said guide members and said sections, a handle-support at each side of said annular guide, said handle-supports and said annular guide being relatively shiftable, substantially as de-
70 scribed.

21. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide comprising sections, 8,
75 radial guide members located between said sections, shafts extending through said guide members and said sections, a handle-clamp at each side of said annular guide, said handle-clamps and said annular guide being relatively shiftable, substantially as described.

22. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, and a handle-support at
80 each side of said guide, said handle-supports and said annular guide being relatively shiftable, and locking mechanism, substantially as described.

23. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, and a handle-clamp at
90 each side of said guide, said handle-clamps and said annular guide being relatively shiftable, and locking mechanism, substantially as described.

24. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage,
95 and a handle-support upon said carriage at each side of said guide, and locking mechanism, substantially as described.

25. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage,
100 and a handle-clamp upon said carriage at each side of said guide, and locking mechanism, substantially as described.

26. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, and a handle-support at
110 each side of said guide, said handle-supports and said annular guide being relatively shiftable, and pawl locking mechanism, substantially as described.

27. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, and a handle-clamp at
115 each side of said guide, said handle-clamps and said annular guide being relatively shiftable, and pawl locking mechanism, substantially as described.

28. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage,
120 and a handle-support upon said carriage at each side of said guide, and pawl locking mechanism, substantially as described.

29. In a machine for making mops and brushes, the combination with a frame, of an

annular cord-guide, and a handle-support at each side of said guide, said handle-supports and said annular guide being relatively shiftable, and driving mechanism for relatively shifting said supports and said guide, substantially as described.

30. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, and a handle-clamp at each side of said guide, said handle-clamps and said annular guide being relatively shiftable, and driving mechanism for relatively shifting said clamps and said guide, substantially as described.

31. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage, and a handle-support upon said carriage at each side of said guide, and driving mechanism for relatively shifting said supports and said guide, substantially as described.

32. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage, and a handle-clamp upon said carriage at each side of said guide, and driving mechanism for relatively shifting said clamps and said guide, substantially as described.

33. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage, and a handle-support upon said carriage at each side of said guide, and rack-and-gear driving mechanism applied to said carriage, substantially as described.

34. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage, and a handle-clamp upon said carriage at each side of said guide, and rack-and-gear driving mechanism applied to said carriage, substantially as described.

35. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, a handle-support at each side of said guide, said handle-supports and said annular guide being relatively shiftable, and a relatively stationary handle-gage at

each side of said annular guide, substantially as described.

36. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, a handle-clamp at each side of said guide, said handle-clamps and said guide being relatively shiftable, and a relatively stationary handle-gage at each side of said annular guide, substantially as described.

37. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage, a handle-support upon said carriage at each side of said guide, and a relatively stationary handle-gage at each side of said cord-guide, substantially as described.

38. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, a handle-support at each side of said guide, said handle-supports and said annular guide being relatively shiftable, and a relatively stationary adjustable handle-gage at each side of said annular guide, substantially as described.

39. In a machine for making mops and brushes, the combination with a frame, of an annular cord-guide, a handle-clamp at each side of said guide, said handle-clamps and said guide being relatively shiftable, and a relatively stationary adjustable handle-gage at each side of said annular guide, substantially as described.

40. In a machine for making mops and brushes, the combination with a frame, of a stationary annular cord-guide, a carriage, a handle-support upon said carriage at each side of said guide, and a relatively stationary adjustable handle-gage at each side of said cord-guide, substantially as described.

In testimony whereof I have signed my name; in presence of two witnesses, this 10th day of January, in the year 1905.

CYRUS KEHR.

Witnesses:

J. C. HARRIS,
H. EDWARD GOETZ.