

1,071,501.

Patented Aug. 26, 1913.

4 SHEETS—SHEET 1.

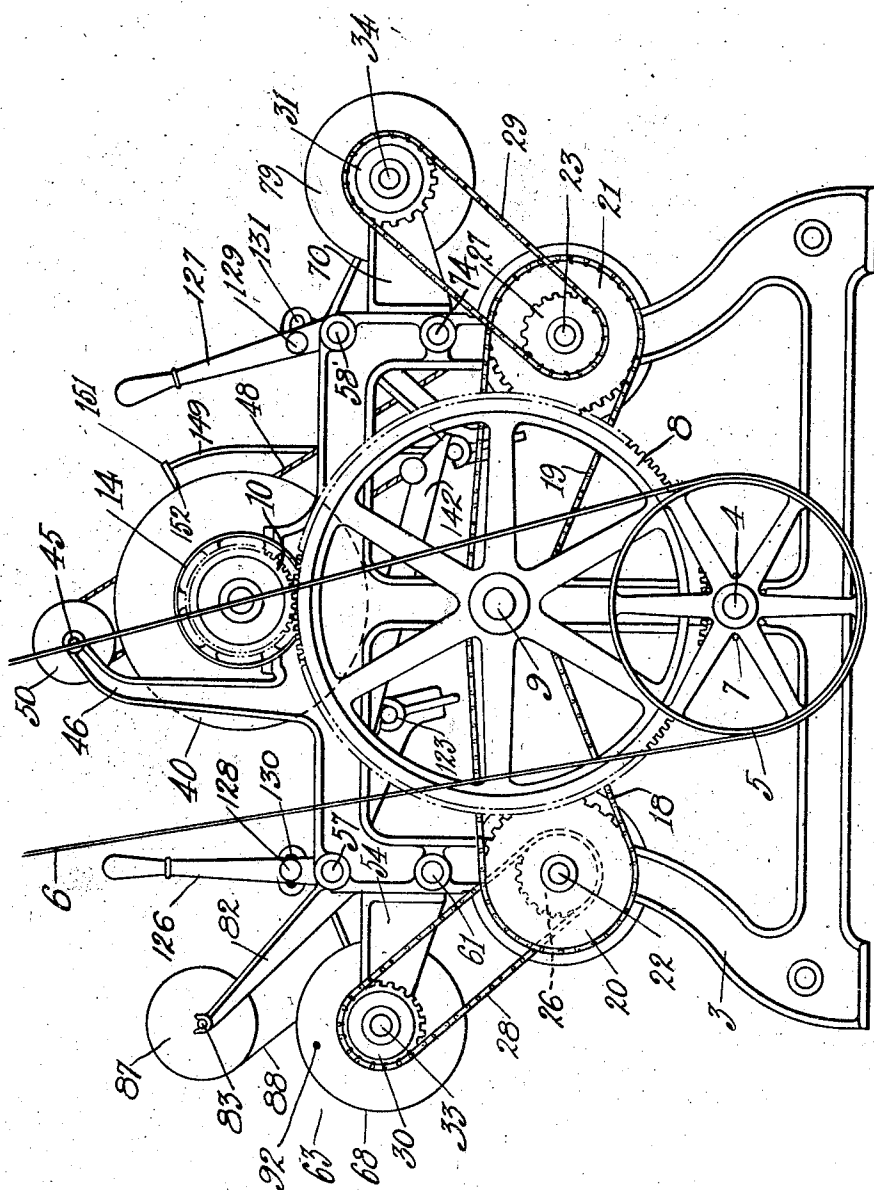


Fig. 1.

Witnesses.

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H. E. BARTON.
BUFFING MACHINE.
APPLICATION FILED APR. 26, 1913.

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4 SHEETS—SHEET 2.

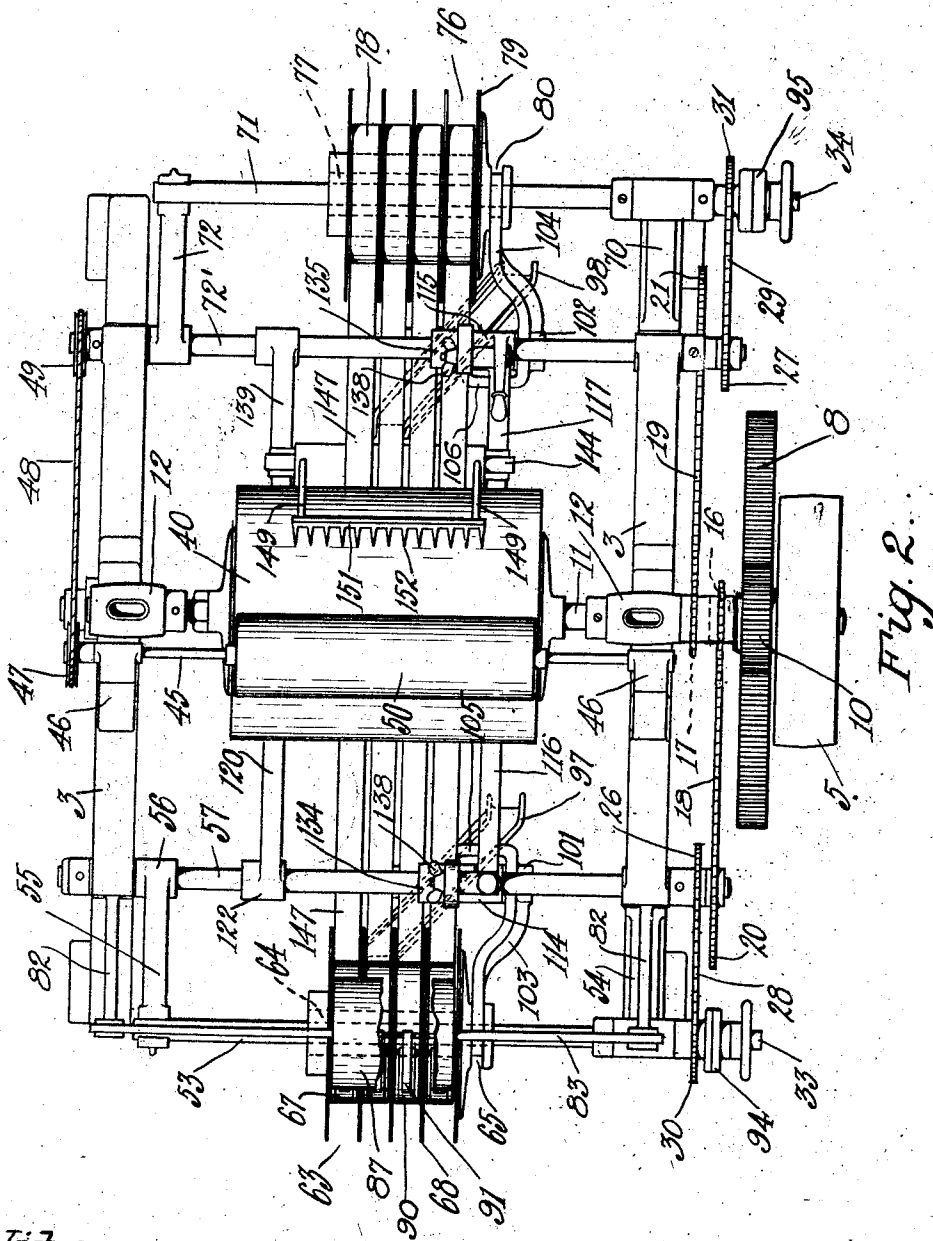


Fig. 2.

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4 SHEETS—SHEET 3.

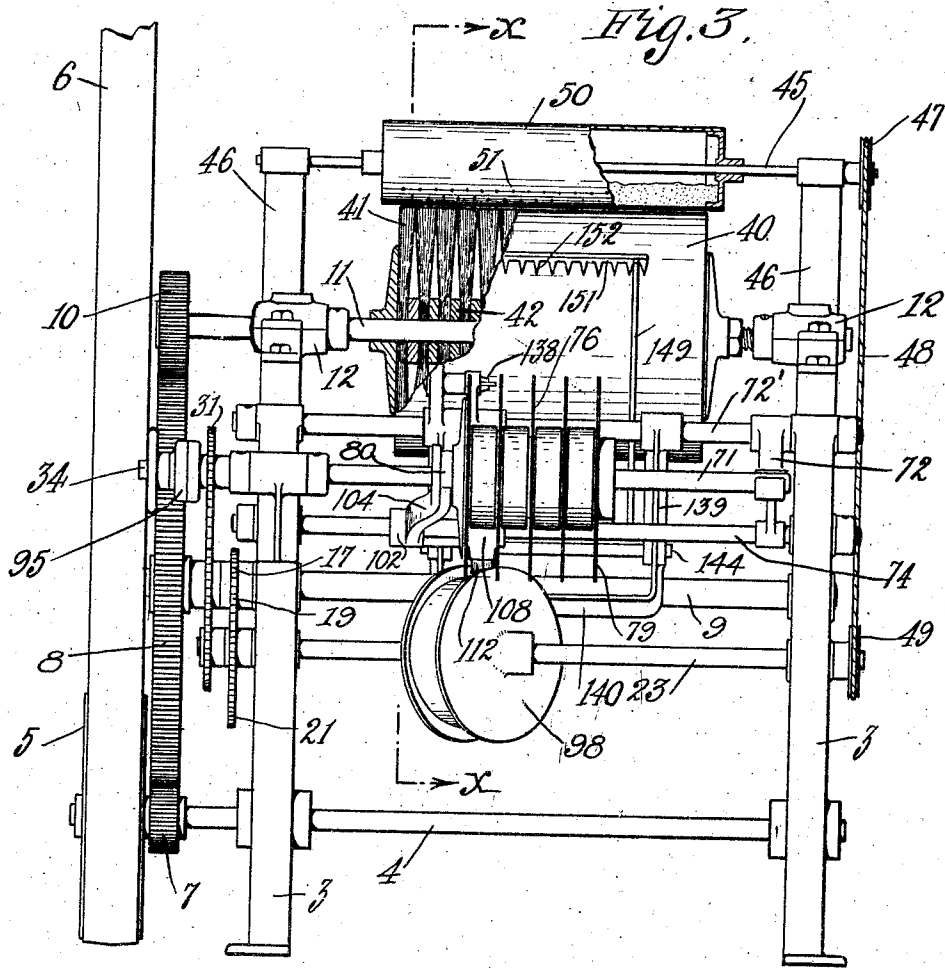
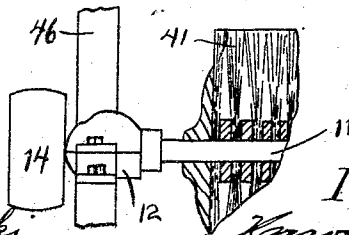


Fig. 7.



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4 SHEETS-SHEET 4.

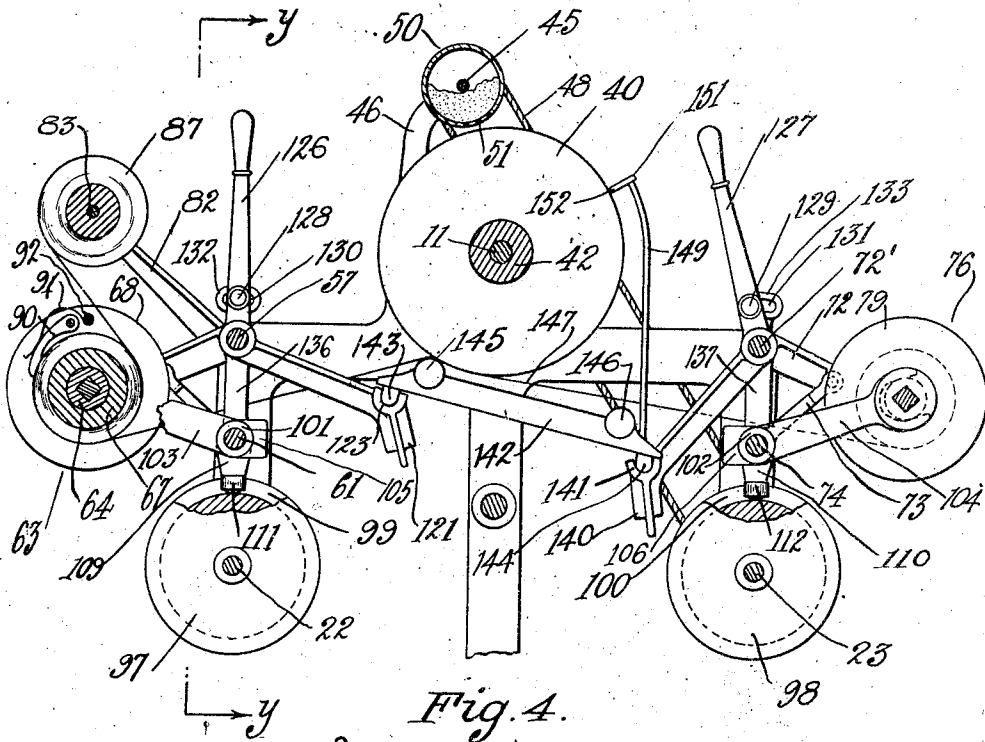


Fig. 4.

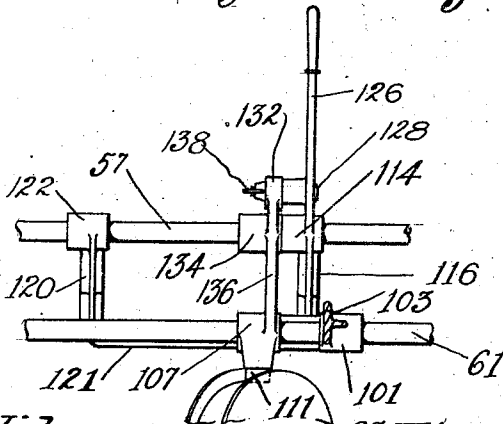


Fig. 5.

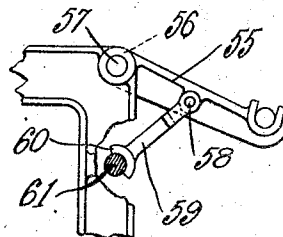


Fig. 6.

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UNITED STATES PATENT OFFICE.

HARVEY E. BARTON, OF ATTLEBORO, MASSACHUSETTS, ASSIGNOR TO FREEMAN-
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BUFFING-MACHINE.

1,971,501.

Specification of Letters Patent.

Patented Aug. 26, 1913.

Application filed April 26, 1912. Serial No. 762,712.

To all whom it may concern:

Be it known that I, HARVEY E. BARTON, a citizen of the United States, residing at Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful improvements in Buffing-Machines, of which the following is a specification.

My invention relates to machines for polishing or buffing articles and materials of all kinds, including metallic strips, wire, and the like.

The essential objects of my invention are to insure a perfect evening of surface irregularities and a high and uniform degree of polish to prevent an uneven wear of the surface of the buff or polishing wheel; to enable the material to be repeatedly operated upon without removal from the machine; to render the buffing operation wholly automatic; to enable the substitution of reels; to prevent the surface of the buff wheel or drum becoming hardened and insure its abrasive character; and to attain the above enumerated objects by a simple and inexpensive structure.

To the above ends essentially my invention consists in such parts and combinations of parts as fall within the scope of the appended claims.

In the accompanying drawings which are to be taken as a part of this specification, and in which are shown merely preferred forms of embodiment of my invention,—Figure 1 is a side elevation of my invention, Fig. 2, a plan of the same, Fig. 3, a front end elevation with parts in section, Fig. 4, a section on line *x x* of Fig. 3, Fig. 5, a partial section on line *y y* of Fig. 4, and Fig. 6, a detailed view of one of the supporting arms. Fig. 7 is an elevation showing a slight modification.

Like reference characters indicate like parts throughout the views.

The invention will be described in connection with the specific embodiment shown, and it will be understood that the invention is not to be limited to such specific showing except for such limitations as the claims impart.

The framework may be of any form of construction suitable for carrying the sev-

eral details of mechanism. In the form thereof herein shown it consists essentially of a framework 3 in which is mounted a driving shaft 4 having on its end a pulley 5 driven from any convenient source of power by a belt 6. Fixed to the shaft 4 is a pinion 7 engaging a large gear 8 mounted on a shaft 9 in the frame 3. The gear 8 meshes with a gear 10 fixed upon the shaft 11 mounted in bearings 12 in the frame 3. If desired a pulley 14 may be fixed upon shaft 11 to be driven from any convenient source of power, in which case the gear 10 is omitted, see Fig. 7. Fixed on shaft 9 are two adjacent sprocket wheels 16 and 17 connected by sprocket chains 18 and 19 respectively with sprocket wheels 20 and 21 fixed to cam shafts 22 and 23 mounted at opposite ends of the frame. Upon the shafts 22 and 23 are fixed sprocket wheels 26 and 27 respectively which drive by chains 28 and 29 sprocket wheels 30 and 31 upon reel shafts 33 and 34 respectively mounted upon arms in the rear and front ends of the machine frame.

Mounted upon the shaft 11 is a buff wheel 40 of any usual convenient construction consisting in the present instance of a plurality of circular pieces of fabric, chamois, buff or leather 41 of pliable character placed face to face having intermediate these flexible pieces at intervals washers or separating blocks 42 of less diameter than the flexible pieces, whereby the peripheral edges of the flexible pieces are by virtue of centrifugal force enabled to take individual course and effect a more individual polishing function upon the work to be operated on, and will be less subject to hardening into a compact mass which is very undesirable.

In the present instance a device is arranged for feeding or distributing abrasive material upon the buff wheel. This device comprises a shaft 45 mounted in uprights 46 upon the frame, which shaft is driven through a wheel 47 upon its end by a round belt 48 from a wheel 49 fixed to the cam shaft 23. Fixed to the shaft 45 is a hollow drum provided with perforations 51, and adapted to hold the abrasive material such as pumice or rotten stone or crocus.

The shafts 33 and 34 are for carrying the

drawing and delivery reels of the machine whose purposes are to carry the stock or material that is being operated upon.

The construction of the machine is such that when desired the drawing or delivering reel may be substituted for each other or run in opposite directions to subject the stock to repeated action of the buff wheel. Upon the end of the machine is the shaft 33 which has its intermediate portion, as at 53, squared, with one end rotatably mounted in a fixed arm 54 upon the rear of the machine, and its opposite end mounted in a bracket arm 55 extending from a hub 56 loose on a guide shaft 57 fixed transversely in the machine frame. The arm 55 is supported intermediate its length at a pivotal point 58 by a rod or arm 59 provided with a concave or bifurcated socket end 60 bearing against a guide shaft 61 fixed in the frame immediately below the guide shaft 57. Upon the shaft 33 is slidably mounted the drawing reel 63. This reel may be of any convenient construction, and in the present instance is particularly adapted to support the stock or material in strip form arranged side by side. The reel 63 comprises a relatively fixed sleeve 64 slidable upon the angular portion 53 of the shaft 33. Upon the end of the sleeve is an annular recess 65. Mounted adjacent each other upon the sleeve 64 are a plurality of spools 67 interspaced with disk like washers 68 provided with sharp cutting peripheries, which disks act as separators for the adjacent strips of stock wound upon the spools. In recharging the machine, or when different sizes of stock are to be employed, it is possible to remove the spools 67 and substitute others, by first removing the spools from the sleeve 64, and sliding them from the shaft 33, after the latter has been detached, by the displacement of the supporting arm 59 from the rod 61. Upon the opposite or front end of the machine in conjunction with the shaft 34 is a construction of reel support and reel similar in all respects to that already described, consisting of a fixed supporting arm 70 for the shaft 34, which has its intermediate portion 71 squared. The opposite supporting arm 72 is pivoted upon a rod or shaft 72' and is supported by the pivoted rod 73 resting upon the lower shaft 74. The reel 76 also has upon its sleeve 77 spools 78 and separating disks 79, and is provided with the annular channel 80.

Upwardly inclined arms 82 upon the rear of the machine frame carry across shaft 83 upon which is fixed a roll 87 adapted to carry a paper strip 88 above the reel 63. From this roll 87 the paper may be fed to the reel over which the metal stock is wound, so that as the reel 63 winds the stock that has been operated upon, it draws the

paper strip 88 against the cutting disks 68, which divide the paper strip into proper widths to allow the constituent parts of the strip to individually be wound in a spiral manner into each of the spiral windings between the division plates 68. It will be understood however that when desired the roll 87 may be omitted, but when metal strips are employed it is very important that the spirally wound polished face of the stock be protected from scratching, and paper is then preferably used. In order to prevent the excessive back-winding or the uncoiling of the metal stock upon either of the reels it has been found advantageous to fix friction pawls 90 upon the inner faces of the plates 68, and these are held in contact with the stock by a flat spring 91 also fixed to the plates 68 at one end, as at 92. A further means for preventing the loosening of the coils upon the reels 63 and 76 are friction brakes or brake shoes 94 and 95 upon the ends of the shafts 33 and 34 respectively. When the drawing reel 63 is in operation it is sometimes found advantageous to apply the friction brake 95 upon the drawn reel 76 to prevent the running away of the latter reel. When the direction of the machine is reversed it is advantageous for a similar reason to put into use the friction brake 94. The reels are reciprocated upon their respective shafts in unison. This reciprocation is attained by means of cam construction as follows. Fixed to the shafts 22 and 23 are cams 97 and 98 provided with peripheral grooves 99 and 100 respectively. Slidably mounted upon the transverse shafts 61 and 74 are hubs 101 and 102 from which extend forked arms 103 and 104 which register in the channels 65 and 80 in the respective reels. Connected with the hubs 101 and 102 by yokes 105 and 106 are companion hubs 107 and 108 on whose respective lower portions are bosses 109 and 110 carrying cam rollers 111 and 112 respectively which engage in the channels of the cams 97 and 98. It will be observed that both the reels 63 and 76 have imparted to them simultaneously and in unison a reciprocating motion upon their respective shafts. Slidable on rods 57 and 72' are hubs 114 and 115 respectively, integral with or fixed to which are downwardly inclined arms 116 and 117. Parallel with the arm 116 is an arm 120 connected at its outer end with a yoke 121, and having upon its opposite end a sleeve 122 loose on the shaft 57, the arms 116, yoke 121 and arm 120 forming a frame. The extremities of the arms 116 and 120 are provided with recesses 123 for a purpose to be later described. Upon the hubs 114 and 115 are upwardly extending hand levers 126 and 127 respectively provided intermediate their lengths with studs 128 and 129 operating in arcuate slots 130 and 131 in ears 132 and 133

respectively upon hubs 134 and 135 respectively, upon the upper ends of arms 136 and 137 integral with hubs 107 and 108; on studs 128 and 129 are clamping nuts 138. It will be understood that the vibration of the lever 126 operates the frame 116 and 121 and 120 in an arcuate path.

A frame similar to that last described is located upon the opposite side of the machine and comprises with the arm 117 a second arm 139 mounted upon the rod 72', and the connecting yoke 140. The arms 117 and 139 are provided with the supporting cavities 141. It will be observed that the operation of the lever handles 126 and 127 is manually effected more or less independently of each other; and the frames connected with these levers are primarily for the purpose of supporting a table or platform 142 provided at its opposite ends with integral studs or trunnions 143 and 144, which rest in the cavities 123 and 141 respectively. Integral with or fixed to the table 142 are ribs or bars 145 and 146 which in the present instance are of glass and are arranged parallel with each other transversely of the frame of the machine upon the upper surface of the table near its extremities. The member 142 is by virtue of the levers 126 and 127 rendered tiltable whereby the members 145 and 146 may be alternately and at will respectively pressed upwardly toward and in contact with the periphery of the buff wheel 40. By virtue of the cams 97 and 98 the member 142 is transversely movable in the machine frame in unison with the reels 63 and 76. In the drawings are shown strips of material to be polished or operated upon 147. The material 147 in the present instance passes from the reel 76 over the portion 145 of the supporting table whereby the strip is held in close contact with the buff wheel. When or if the stock is traveling through the machine in an opposite direction the member 146 is tilted by its lever into contact with the buff wheel in a position corresponding to that formerly occupied by the member 145.

It has been found convenient in some instances to provide the machine with a separating device adapted to operate upon the surface of the buff wheel. The device in the present instance comprises a frame 149 whose lower portion is fixed in the margin of the table 142, and whose upper portion comprises a cross piece 151 which is provided with downwardly directed inclined teeth 152 which contact with the periphery of the buff wheel.

It will be observed that the common trouble in buff wheels, the speedy hardening of the surface by use whereby it becomes ineffective and useless, is obviated by the present construction, not only by the pe-

culiar construction of the buff wheel itself, but by the auxiliary tooth frame engaging its surface and tending to separate the flexible disks or rags of which the wheel is composed.

The usual trouble of the irregular wear and the development of grooves upon the periphery of the buff wheel is obviated by the reciprocation of the stock being operated upon lengthwise of the buff wheel and transversely of the frame of the machine, due to the reciprocating action of the reels and the table.

What I claim is:—

1. In a buffing machine, the combination with a buff wheel, of means for drawing a strip across the wheel, means for transversely reciprocating the drawing means during the advance of the strip, and means for pressing the strip into contact with the buff wheel during the advance of the strip.

2. In a buffing machine, the combination with a buff wheel, of means for drawing a strip across the wheel, means for transversely reciprocating the drawing means during the advance of the strip, means for pressing the strip into contact with the wheel, and means for reciprocating the pressing means in unison with the drawing means.

3. In a buffing machine, the combination with a buff wheel, of means for drawing a strip across the wheel, a member movable toward and away from the wheel in the path of the strip, and means for actuating the member to press the strip against the wheel.

4. In a buffing machine, the combination with a buff wheel, of means for drawing a strip across the wheel, means for transversely reciprocating the drawing means during the advance of the strip, a member movable to and from the buff wheel in the path of the strip to press the strip against the wheel, means for actuating said member, and means actuated by the reciprocating means for imparting a transversely reciprocating movement to said member during the drawing operation.

5. In a buffing machine, the combination with a drawing reel and a delivery reel adapted to support a strip, of a buff wheel intermediate the reels in the path of the strip, means independent of the reels for pressing the strip against the buff wheel, and means actuating the reels for driving the buff wheel.

6. In a buffing machine, the combination with a buff wheel, of a reciprocating drawing reel adjacent one side of the wheel, a delivery reel adjacent the other side of the wheel, means for driving the buff wheel, and means actuating the delivery reel for driving the drawing reel.

7. In a buffing machine, the combination

- with the frame, of a buff wheel mounted in the frame, a shaft in the frame adjacent the wheel and parallel therewith, a drawing reel axially fixed upon the shaft and longitudinally movable thereon, a second shaft in the frame, a reciprocating hub mounted upon the second shaft, an arm upon the hub engaging the reel, and means actuating the buff wheel operating the hub.
8. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, rotary shafts in the frame at opposite sides of the buff wheel parallel therewith, axially fixed wheels longitudinally movable on the rotary shafts, shafts fixed in the frame parallel with the first mentioned shafts, reciprocating hubs upon the fixed shafts, arms upon the hubs engaging the reels, and means actuating the reels for reciprocating the hubs.
9. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, a shaft in the frame adjacent the buff wheel and parallel therewith, an axially fixed reel slidably mounted upon the shaft, a second shaft fixed in the frame adjacent the first shaft, a hub slidably mounted on the fixed shaft, an arm on the hub engaging the reel, a stud on the hub, a cam shaft mounted in the frame, a cam on the cam shaft, engaging the stud, and means for actuating the cam.
10. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, shafts in the frame at opposite sides of the buff wheel and parallel therewith, axially fixed reels longitudinally movable on the shafts, a fixed shaft in the frame parallel with the first mentioned shafts, a hub slidably mounted upon the fixed shaft, an arm on the hub engaging the reel, a stud on the hub, a cam shaft mounted in the frame, a cam upon the shaft engaging the stud, and means actuating the reel shafts for driving the cam shaft.
11. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, rotary shafts in the frame at opposite sides of the buff wheel and parallel therewith, reels longitudinally movable on the shafts, brake shoes upon the shafts, a fixed shaft in the frame parallel with the first mentioned shafts, a hub slidably mounted upon the fixed shaft, an arm upon the hub engaging one of the reels, and means for actuating or reciprocating the hub.
12. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, shafts in the frame at opposite sides of the buff wheel and parallel therewith, reels upon the shafts, means for rotating the shafts, rods in the frame adjacent the buff wheel and parallel therewith, frames pivotally mounted on the rods below the buff wheel, levers fixed to the pivoted frames, and a table resting upon the free ends of the frames movable to and from the buff wheel when the levers are operated.
13. In a buffing machine, the combination with a frame, of a buff wheel mounted in the frame, shafts in the frame at opposite sides of the buff wheel and parallel therewith, reels upon the shafts, means for rotating the shafts, rods fixed in the frame adjacent the buff wheel and parallel therewith, frames pivotally mounted in the rods, levers fixed to the pivoted frames, means for clamping the levers, and a table resting on the free ends of the frames movable to and from the buff wheel when the levers are operated.
14. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, shafts in the frame at opposite sides of the buff wheel and parallel therewith, reels upon the shafts, rods in the frame adjacent the buff wheel and parallel therewith, frames pivotally mounted on the rods, levers fixed to the pivoted frames, a table resting upon the free ends of the frame movable to and from the buff wheel when the levers are operated, and a marginal rib upon the table parallel with the buff wheel.
15. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, shafts in the frame at opposite sides of the buff wheel, reels upon the shafts, guide shafts in the frame adjacent the buff wheel, guide rods in the frame, frames pivotally mounted on the guide rods, levers in the last mentioned frames, a table on said frames below the buff wheel, hubs upon the guide shafts, hubs upon the guide rods, bars connecting the hubs, studs on the guide shaft hubs, cam shafts mounted in the frame, cams on the cam shafts engaging the studs, and means for actuating the cam shafts actuating the reel shafts.
16. In a buffing machine, the combination with a buff wheel, of means for drawing a strip across the wheel, means for transversely reciprocating the drawing means during the advance of the strip, and means for depositing an abrasive upon the wheel.
17. In a buffing machine, the combination with the frame, of a shaft mounted in the frame, a buff wheel on the shaft, a second shaft in the frame above the buff wheel, a drum upon the shaft provided with perforations, a reciprocating drawing reel adjacent the buff wheel, a delivery reel adjacent the other side of the wheel, and means actuating the buff wheel for operating the drum shaft and the reels.
18. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, shafts in the frame at opposite sides of the buff wheel, reels upon the shafts, 130

guide rods in the frame adjacent the wheel, frames pivotally mounted on the rods, levers fixed to the pivoted frames, a table resting upon the frames, a frame fixed to the table, teeth on the fixed frame engaging the buff wheel, and means for actuating the reel shafts.

19. In a buffing machine, the combination with the frame, and the buff wheel mounted therein, of reel shafts in the frame adjacent the buff wheel, and reels on the reel shafts comprising cores and spools, and means for driving the reel shafts.

20. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, a fixed arm on the frame, a pivoted arm on the frame in alinement with the fixed arm, a brace pivotally connected with an intermediate portion of the pivoted arm with its free end resting against the frame, a shaft rotatably mounted in the fixed arm and resting upon the pivoted arm, and disposed parallel with the buff wheel adjacent to the buff wheel, and a reel comprising a core upon the shaft, spools

slidably mounted upon the core, and disks upon the core intermediate the spools.

21. In a buffing machine, the combination with the frame, of a buff wheel mounted in the frame, shafts rotatably mounted in the frame at opposite sides of the buff wheel, buff wheels upon the shafts, disks upon the reels, a shaft in the frame adjacent one of the reel shafts, a roll upon the last mentioned shaft adapted to feed material to the disks, and means for actuating the reel shafts.

22. In a buffing machine, the combination with the reels and means for actuating the same, of a buff wheel intermediate the reels, means for drawing a strip across the wheel, means for transversely reciprocating said drawing means in unison with the drawing of the strip, and strip-pressing means.

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

HARVEY E. BARTON.

Witnesses:

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