No. 802,136. PATENTED OCT. 17, 1905.

J. BUSFIELD.

BUFFING MACHINE.

APPLICATION FILED MAY 25, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

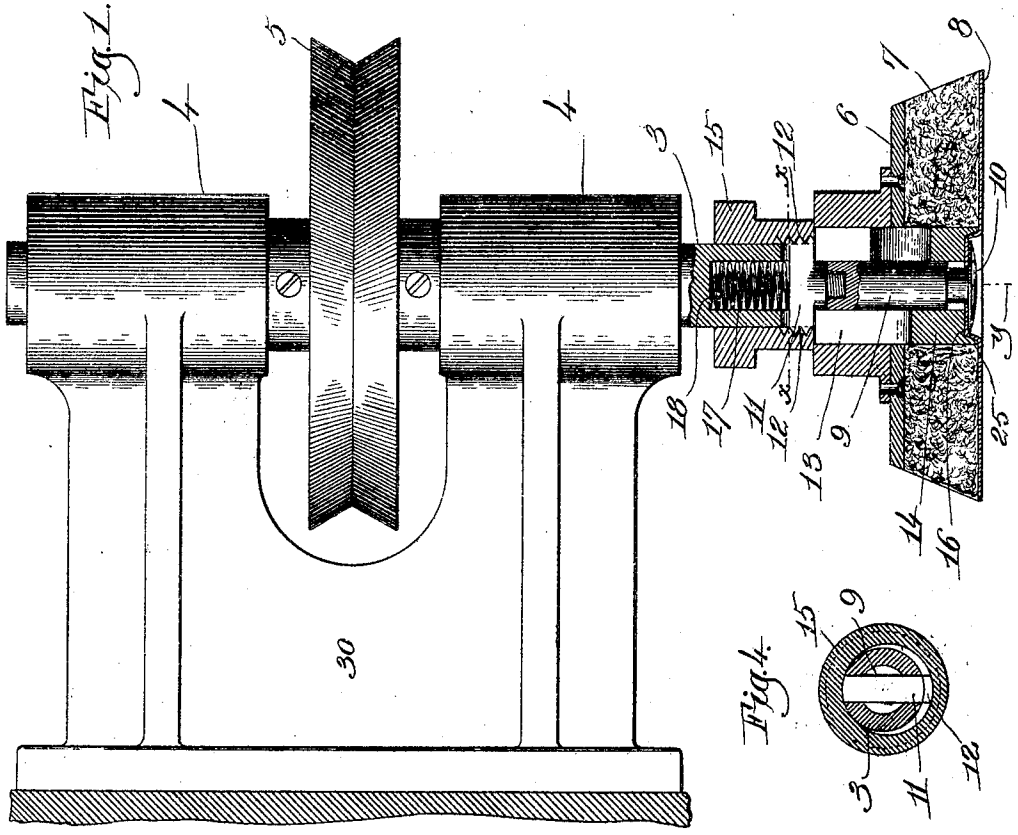


Fig. 4.

Fig. 2.

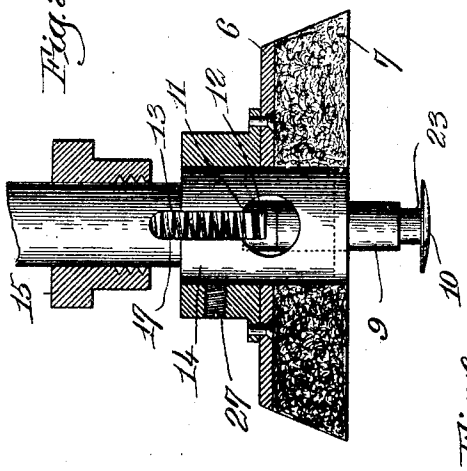
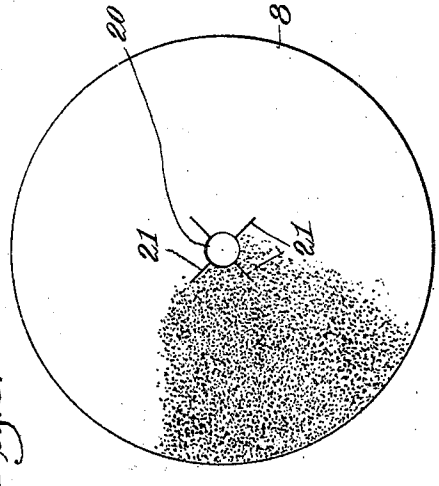


Fig. 3.



Witnesses.
Thomas A. Drummond.
S. Wm. Lutton.

Inventor.
James Busfield,
by Crosby Gregory
Atty's

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2 SHEETS--SHEET 2.

Fig. 5.

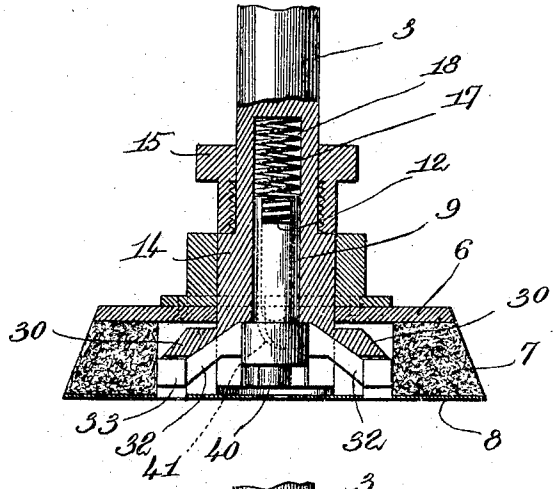


Fig. 6.

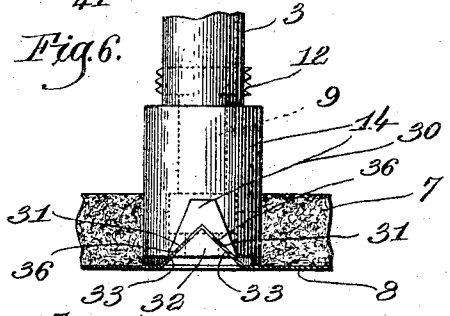
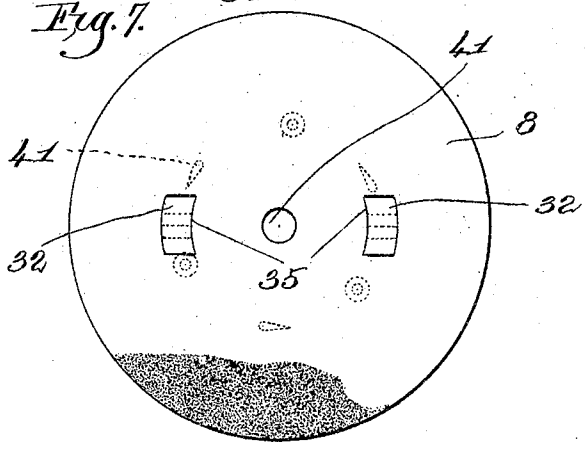


Fig. 7.



Witnesses.
Thomas J. Drummond.
Warren D. Owen

Inventor.
James Busfield,
by Crosby & Gregory Attys.

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES BUSFIELD, OF HAVERHILL, MASSACHUSETTS.

BUFFING-MACHINE.

No. 802,136. Specification of Letters Patent. Patented Oct. 17, 1905.

Application filed May 25, 1904. Serial No. 209,643.

To all whom it may concern:

Be it known that I, JAMES BUSFIELD, a citizen of the United States, residing at Haverhill, in the county of Essex and State of Massachusetts, have invented an Improvement in Buffing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to that class of buffing-machines in which the pad of felt or similar material is mounted on a spindle, the axis of which is at right angles to the face of the pad, and a pad-cover with an abrasive outer face is held against the face of the pad. In this type of buffing-machines it is important that the means for securing the pad-cover to the buffing-wheel should be such that the cover can be quickly and easily removed or replaced and also such that said securing means is located below the abrasive face of the buffing-wheel.

My present invention has for its object to provide a novel means for securing the pad-cover to the face of the buffing-wheel, which means embodies the essential requirements above mentioned—that is, it is so constructed that the cover can be quickly and easily removed from or replaced upon the wheel and that when in operative position for clamping the pad-cover in place it is sunk below the face of the pad, and therefore cannot be brought into engagement with the material being buffed.

In the best form of my invention now known to me the means for attaching the pad-cover comprises a pad-retainer located within the spindle, said retainer having at its outer end a clamping-face adapted to coöperate with a clamping-face carried by the spindle. Suitable automatically-operative means are employed to separate the clamping-faces and other positively-acting means are employed to draw said faces together, thereby to clamp the pad-cover therebetween.

In the drawings, Figure 1 is a view showing my improvements, the buffing-wheel and attaching means for the pad-cover being shown in section. Fig. 2 is a view of the buffing-wheel on the line *y*, Fig. 1. Fig. 3 is a face view of the pad-cover. Fig. 4 is a section on the line *x x*, Fig. 1. Fig. 5 shows a slightly-different form of my invention. Fig. 6 is a detail hereinafter referred to. Fig. 7 is a view of the face of a buffiing-wheel embodying this form of my invention.

3 designates the spindle to which the buffing-wheel is applied, said spindle being shown as mounted in any suitable bearings 4 and as driven by a driving-pulley 5. The buffing-wheel is mounted on the end of the spindle and comprises a back-plate or holder 6, of metal, leather, or any other suitable material, a body portion or pad 7, of felt or similar material, resting against and supported by the holder, and the pad-cover 8, which is secured to the face of the wheel and has an abrasive outer surface. The holder and pad are both mounted on the spindle, which is herein shown as being provided with an enlarged end 14 to receive them. The pad-cover 8 is held in place by a retaining member which is located within the spindle and which is provided at its outer end with a clamping head or face adapted to coöperate with a clamping-face rigid with the spindle.

In the form of the invention shown in Figs. 1 and 2 the retaining member is designated by 9, and the clamping-face thereon is the inner face of the head 10 at the end of said retainer, and the clamping-face on the spindle is the bottom of the recess 16, formed in the end of the spindle.

In the form of my invention shown in Figs. 5 to 7 the spindle has rigid therewith one or more arms 30, which are shaped to present clamping-faces 31, and the pad-retainer 9^a is shaped at its end to present arms 32, the inner faces 33 of which constitute clamping-faces which coöperate with the clamping-faces 31, carried by the spindle. I prefer to make the clamping-faces 31 on the spindle inclined or **V**-shaped, as best seen in Fig. 6, and therefore the clamping-faces 33 on the pad-retainer will have a corresponding shape.

In both forms of my invention the retainer is formed at its inner end with the foot portion 11, which occupies a longitudinal slot 13 in said spindle, said foot portion being provided with screw-threads 12, with which cooperate the screw-threads of a nut 15, which surrounds the spindle and lies back of the enlarged portion 14 thereof. From Fig. 6 it will be seen that the foot portion 11 projects sufficiently beyond the spindle 3, so that the threads 12 thereof may be engaged by the threads of the nut 15. Situated within a recess or cavity 18 within the spindle is auto-

matically-operative means, such as a spring 18, which tends normally to force the pad-retainer outwardly.

Where the form of retainer shown in Figs. 1 and 2 is employed, the pad-cover 8 will be constructed with a central aperture 20 and provided with one or more radial slits 21, extending from the aperture. When it is desired to put the pad-cover on the pad or to replace a worn cover with a fresh cover, the nut 15 will be backed off from the foot portion 11, as seen in Fig. 2, thereby allowing the automatically-operative means to project the retainer forward, as shown in Fig. 2. When in this position, the pad-cover may be forced over the head 10 of the retainer and thereafter said retainer forced inwardly until the screw-threaded foot portion is in position to be engaged by the nut 15. By screwing said nut up the central portion of the pad-cover is gripped between the clamping-face on the pad-retainer and that on the spindle, as seen in Fig. 1.

Where the form of retainer shown in Figs. 5 and 6 is employed, the pad-cover is slitted, as at 35, to form apertures through which the clamping ends of the arms 32 may be inserted, the portions 36 of said pad-cover which are formed by the slits presenting wings which are adapted to enter between the clamping-faces 31 and 33.

In applying a pad-cover such as shown in Fig. 7 the nut 15 is first backed off, thereby to allow the automatically-operative means 18 to project the retainer into position to have the pad-cover inserted over the head thereof and thereafter the portions 36 of the pad-cover are firmly clamped between the clamping-faces by screwing up the nut 15. It will be noted that in both forms of my invention I provide positively-acting means for drawing the clamping-faces together and automatically-operative means for projecting the retainer beyond the pad. I regard these two features as quite important, because the automatically-operative means insures that the retainer will be certainly and automatically projected beyond the face of the pad as soon as the nut 15 is backed off, and the positive means for drawing the clamping-faces together insures that the pad-cover will be firmly held in place while the machine is in operation. In a buffing-machine which comprises both of these features the pad-cover may be very quickly removed and replaced by a new one, and it is firmly held in place while the machine is in operation. It will also be noted that in both forms of my invention I have so constructed the retaining member that when the clamping-faces are drawn together no part of the retainer projects beyond or even comes flush with the face of the pad. This is a desideratum in buffing-machines of this class.

The form of clamping means shown in Figs. 5 to 7 has this advantage over that shown in Figs. 1 and 2, that the pad-cover is gripped at two oppositely-disposed points comparatively near its circumference, and is thus more securely held in position than when it is gripped only at its central portion.

If desired, the pad-retainer shown in Figs. 5 and 7 may be provided with a centering projection 40, adapted to enter a central aperture 41 in the pad-cover in order to center said cover while it is being applied.

The holder 6 is preferably made adjustable on the spindle and is held in its adjusted position by a set-screw 27. The advantage in making the holder adjustable is that it can be moved outward toward the end of the spindle to compensate for any compressing or shrinkage of the pad 7, whereby the face of the pad may always be maintained beyond the end of the retainer.

I prefer to provide the backing-piece 6 with a plurality of curved prongs 410, which are adapted to enter the pad 7 and prevent the latter from falling off from the spindle when the pad-cover is removed. These curved prongs 410 are preferably turned in such a direction that the resistance of the material being buffed against the buffing-wheel tends to force the same into the pad 7.

The improvements I have above described may be applied in various ways and to any buffing-wheel of this type, whether said wheel is in the nature of an attachment to an ordinary buffing-machine or constitutes a separate and independent buffing-machine of itself. In case the device is used as an attachment to an ordinary buffing-machine I propose to form the bearings 4 as part of a suitable casting 30 and which can be clamped, bolted, or otherwise secured to the side of an ordinary buffer. I may, if desired, provide the spindle 3 with fast and loose pulleys or with some suitable clutch mechanism, so that it can be started and stopped whenever necessary.

While I have illustrated herein two forms of my invention, I do not wish to be limited thereto, as other ways of securing the pad-cover to the wheel by means of clamping members which are normally located below the surface of said wheel, could be used without departing from my invention.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a buffing-machine, a spindle having a clamping-face rigid therewith, a pad-retainer having a clamping-face adapted to coöperate with that on the spindle, a holder adjustably mounted on the spindle a pad borne by the spindle and backed by said holder, a pad-cover, and positively-acting means to clamp said pad-cover between said clamping-faces.

2. In a buffing-machine, a spindle having a clamping-face, a pad-retainer having a clamping-face coöperating with that on the spindle, automatically-operative means to separate said

clamping-faces, and positively-acting means to draw said faces together.

3. In a buffing-machine, a spindle having a clamping-face, a pad-retainer having a clamping-face coöperating with that on the spindle, a spring to separate said clamping-faces, and means to draw said clamping-faces together.

4. In a buffing-machine, a spindle having a clamping-face, a holder mounted thereon, a pad sustained by said holder, a pad-cover, a pad-retainer within the spindle and having a clamping-face coöperating with that on the spindle, a spring to separate said clamping-faces, and means to draw them together thereby to clamp the pad-cover between them.

5. In a buffing-machine, a spindle having a non-axial clamping-face, a pad-retainer located within the spindle and having a clamping-face coöperating with that on the spindle.

6. In a buffing-machine, a spindle having a non-axial clamping-face, a pad-retainer located within the spindle and having a clamping-face coöperating with that on the spindle, and means to move said faces toward and from each other.

7. In a buffing-machine, a spindle having at its end a radial arm provided with a clamping-face, a retainer within the spindle also having a radial arm provided with a clamping-face, and means to draw said faces together.

8. In a buffing-machine, a spindle having at its end a radial arm provided with a non-axial clamping-face, a pad mounted on the spindle, a pad-cover, a pad-retainer within the spindle, said retainer having a radial arm provided with a clamping-face to coöperate with that carried by the spindle, and means to draw said clamping-faces together thereby to clamp a portion of the pad-cover between them.

9. In a buffing-machine, a spindle provided at its end with a V-shaped clamping-face, a pad borne by the spindle, a pad-cover, a pad-retainer having a clamping-face of a contour corresponding to that of the clamping-face on the spindle, and means to draw said clamping-faces together thereby to clamp a portion of the pad-cover between them.

10. In a buffing-machine, a spindle having a clamping-face, a holder mounted on the spindle, a pad borne by the spindle, a pad-cover, a pad-retainer located within the spindle and having a clamping-face to coöperate with the clamping-face on the spindle, said retainer having a screw-threaded portion and a nut on the spindle to engage said screw-threaded portion.

11. In a buffing-machine, a spindle carrying a clamping-face, a pad-retainer situated axially on the spindle and having a clamping-face coöperating with that on the spindle, said retainer also having a screw-threaded portion, a pad, a pad-cover, a nut on the spindle coöperating with the pad-retainer to clamp the pad-cover between said clamping-faces, and automatically-operative means to separate said clamping-faces.

12. A pad-cover for a buffing-machine, provided with slits to present wings, as 36, which are situated between the center and the periphery of the cover.

13. A pad-cover for a buffing-machine provided with pairs of parallel slits situated between the periphery and center of the cover, each pair of slits being crossed by a transverse slit thereby to present oppositely-directed wings, as 36.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES BUSFIELD.

Witnesses:
LOUIS C. SMITH,
M. A. DUNN.