

No. 768,366.

PATENTED AUG. 23, 1904.

N. HUGHES.

PORTABLE SURFACING MACHINE.

APPLICATION FILED NOV. 11, 1902.

NO MODEL.

Fig. 1.

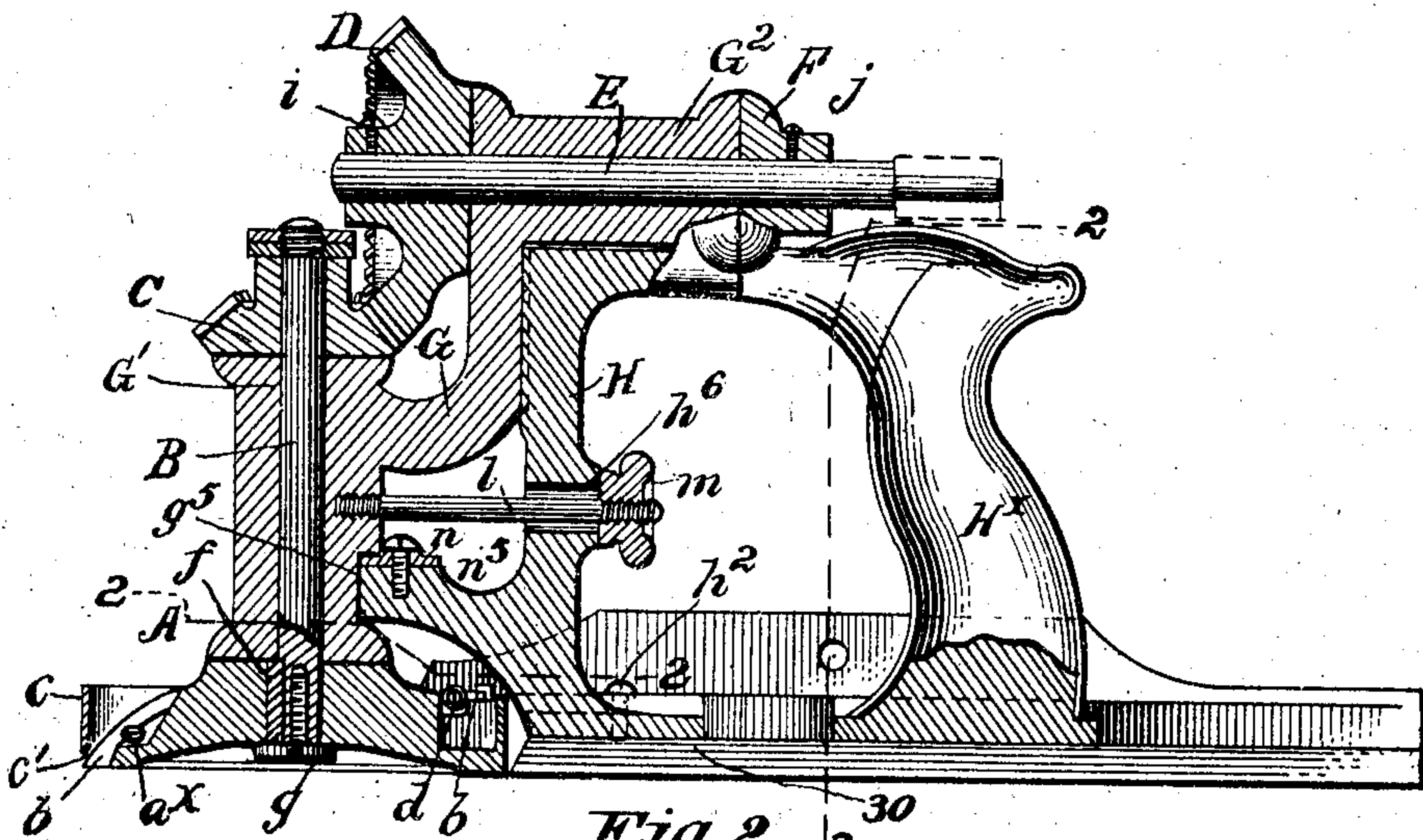


Fig. 2. 2^{30}

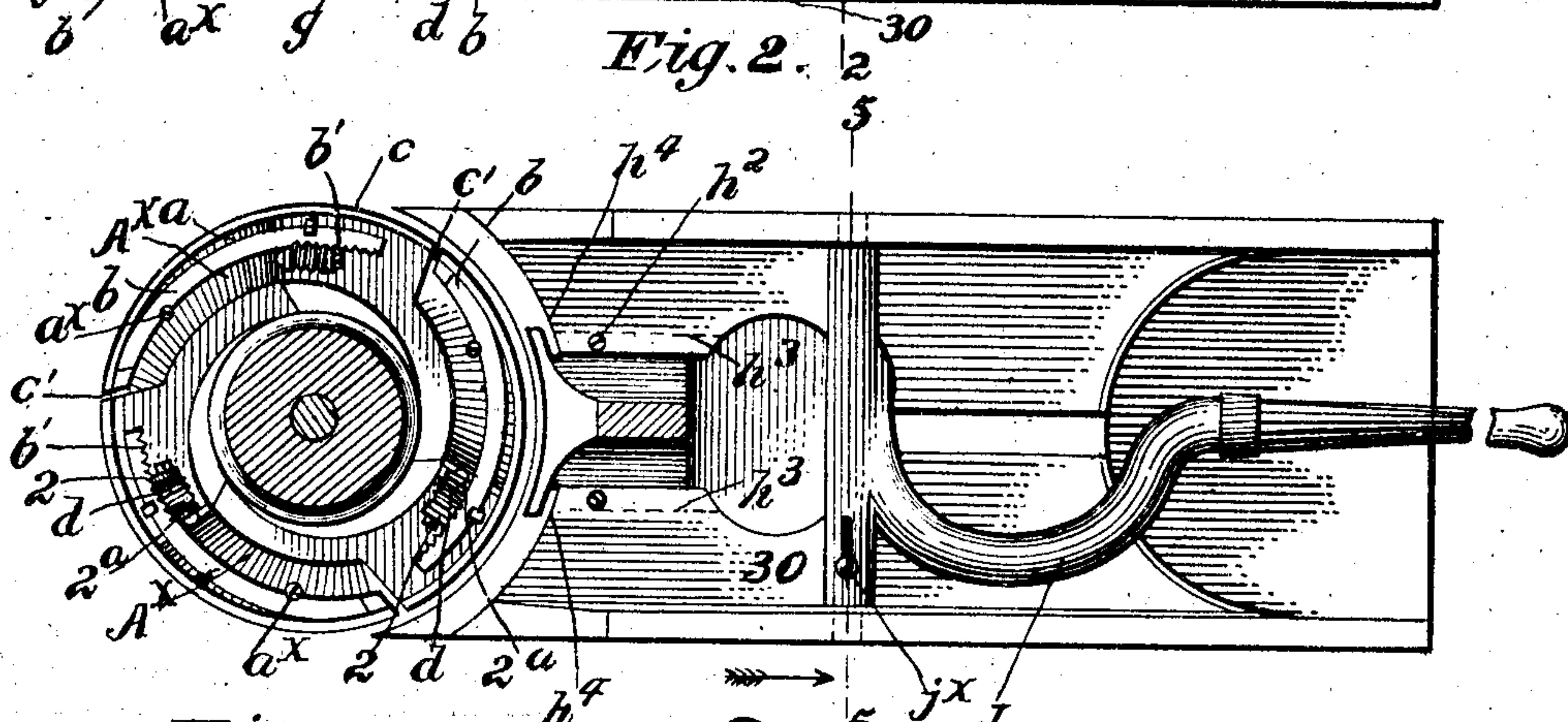


Fig. 3.

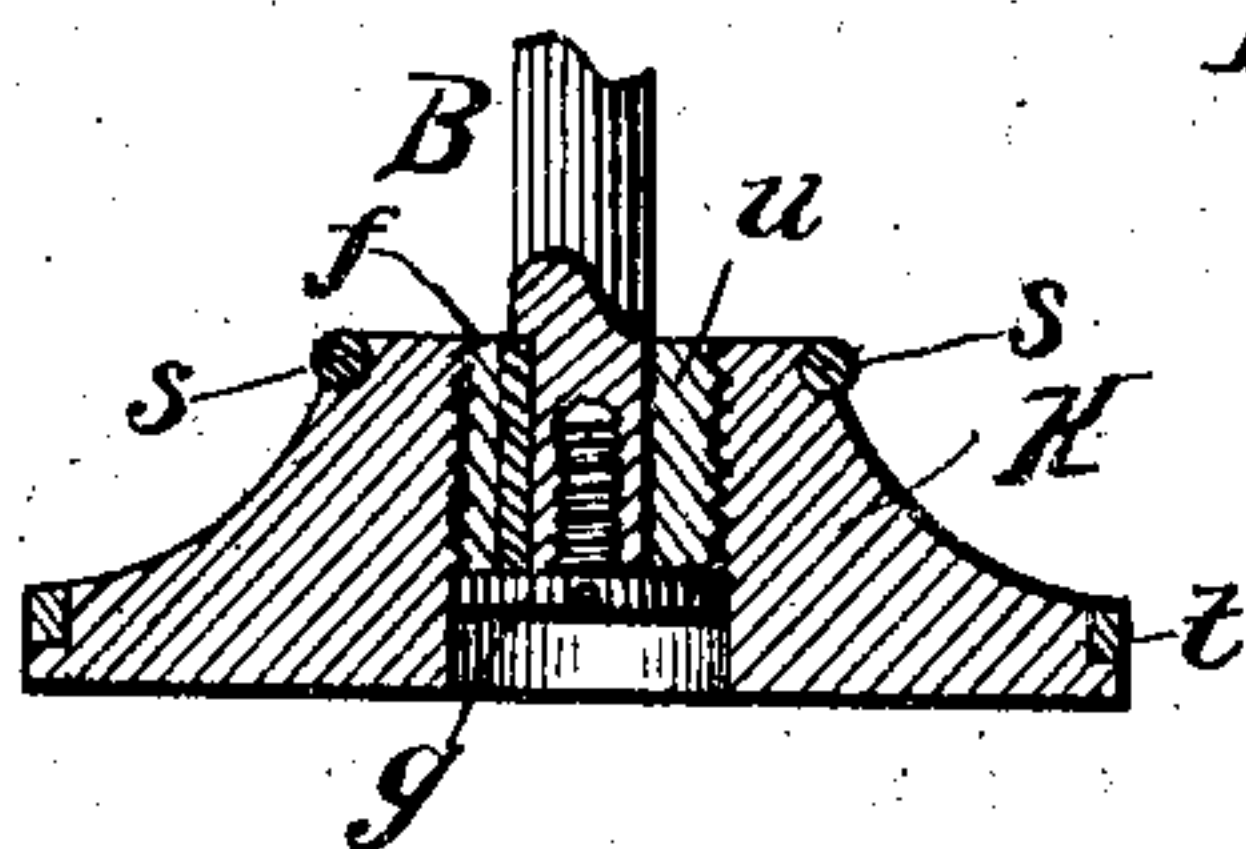


Fig. 5.

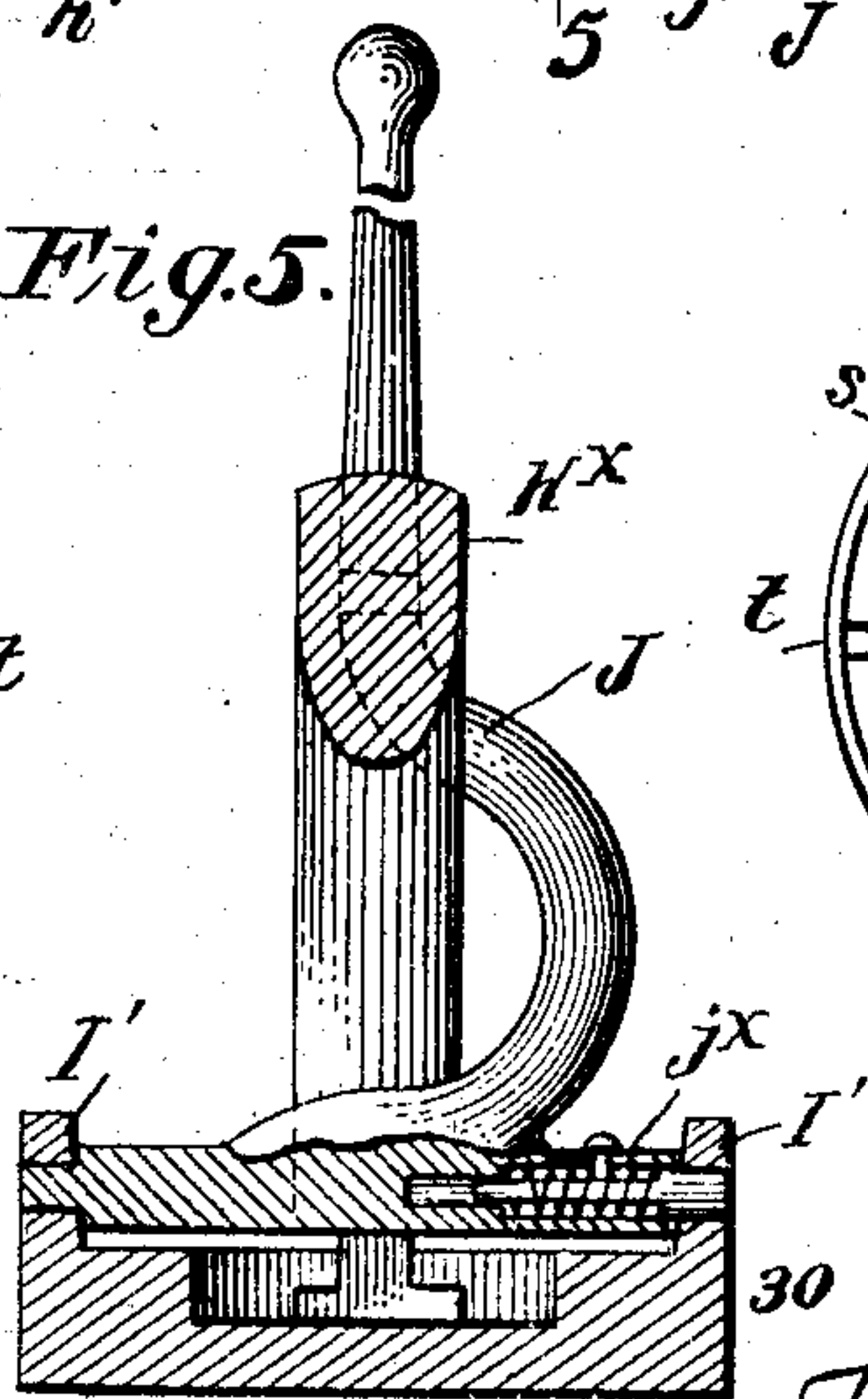
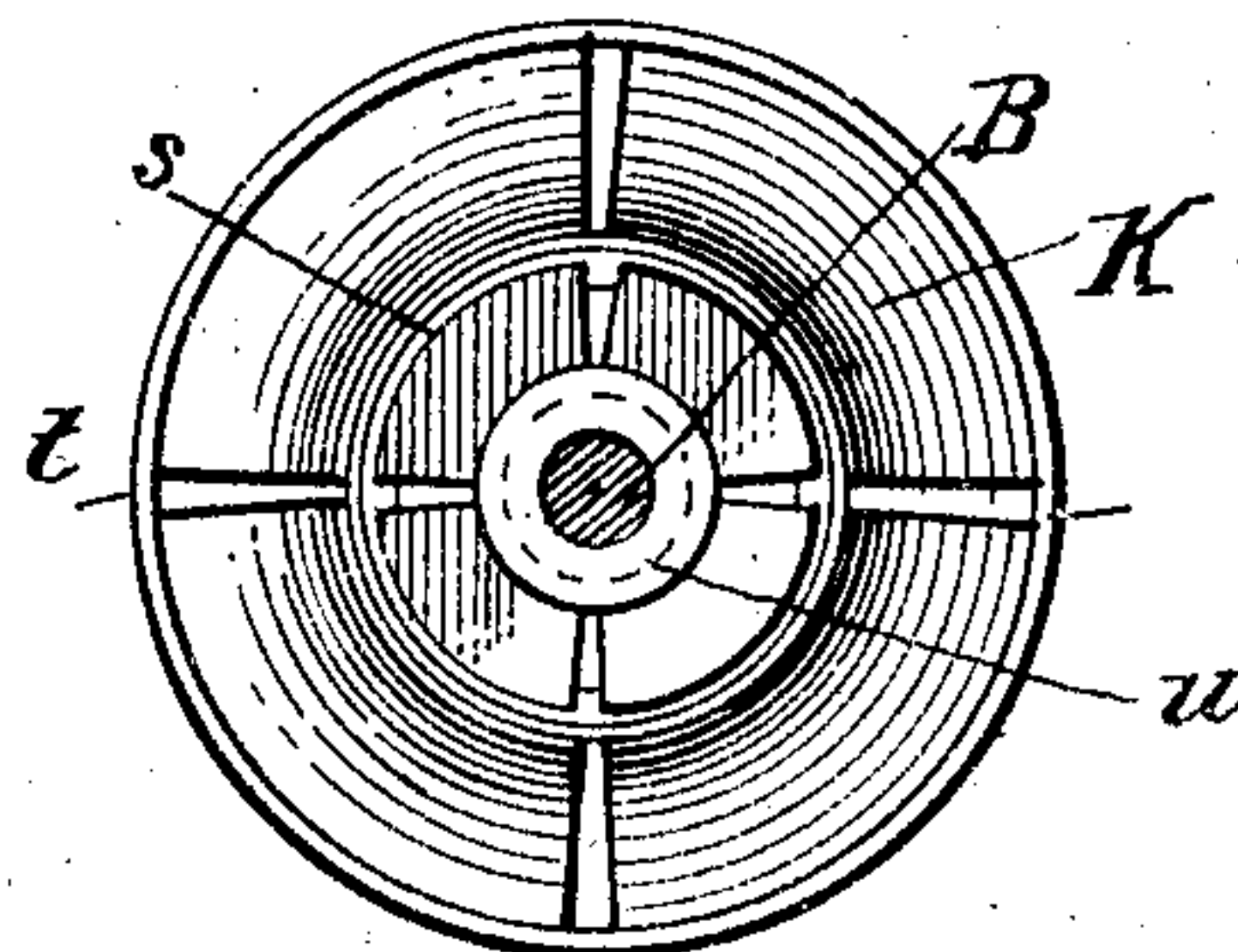


Fig. 4.



WITNESSES :

Guy W. Worthington
John E. Burch

INVENTOR

N. Hughes

BY

Fred G. Kretsch
ATTORNEYS

ATTORNEYS

UNITED STATES PATENT OFFICE.

NELSON HUGHES, OF PORTLAND, OREGON.

PORTABLE SURFACING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 768,366, dated August 23, 1904.

Application filed November 11, 1902. Serial No. 130,891. (No model.)

To all whom it may concern:

Be it known that I, NELSON HUGHES, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and Improved Portable Surfacing-Machine, of which the following is a specification.

This invention relates to improvements in that type of machines for grinding and polishing plain surfaces, particularly wood surfaces, in which is included a rotary scraper or grinding member, a support therefor for shifting the grinding or scraping member over the surface to be treated, and in which means is provided for imparting motion to the rotary member as the same is moved over the floor or other surface.

Primarily my invention seeks to provide an appliance of the character stated of a simple and economical construction, easily manipulated to work close in angles or corners, in which the scraping or rubbing member can be sensitively adjusted and in which the parts are coöperatively joined for effectively smoothing parquetry or other floors and other similar plain surfaces.

My invention in its generic sense comprehends a body portion or frame, including a flat smooth bearing-surface, a handle or grip member whereby the said body can be readily moved over a plain surface in which is mounted a rotary head having means for detachably attaching scraper or rubbing members thereto, and a driving means therefor, including a drive-pulley for receiving motion through the medium of a flexible drive-shaft; and in its more complete nature my invention embodies a new and novel means for attaching the cutter-heads or grinding-stocks to the rotary member which supports and rotates them; and in its more subordinate features my invention consists in certain details of construction and peculiar combination of parts, all of which will hereinafter be fully described, and specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of my improvement. Fig. 2 is a horizontal section taken on the line 2 2 of Fig. 1, the rotary shaft-supporting bracket being omitted and a

pivoted handle member substituted for the stationary handle shown in Fig. 1. Fig. 3 is a cross-section of a rubbing or emery-faced mandrel or head. Fig. 4 is a top plan view thereof, and Fig. 5 is a cross-section taken on the line 5 5 of Fig. 2 and illustrates the manner of connecting the pivotal handle.

In the practical construction of my invention the head A is provided with a series of recesses or seats *a* to receive the bits or cutters *b*, which are secured in the manner best shown in Figs. 1 and 2, by reference to which it will be observed a number of cutters of segmental shape are provided eccentrically disposed to the axial bearing of the head A, and each of the said cutters is held at an incline and with its cutting edge radially disposed to the axis of the head and in a plane below the lower surface of the said head, as clearly shown in Fig. 1.

Each cutter-head is preferably formed of segmental portions *A*^x, on each of which is mounted a cutter-blade *b*, each of which cutter-blades *b* is guided by a set-screw *a*^x on the respective portions *A*^x. Each of the segmental portions *A*^x is provided with a vertical flange *c*, and at a point in front of the cutting edge of the member *b* each flange portion *c* has an opening *c*['] for the clearance of the shavings or cuttings as the head A is rotated. The several sections *A*^x are held in their coöperative position by the set-screw *g*. If found necessary, I may place a band around the several sections in the same manner as the band *s* is applied to the head K. (Shown in Fig. 3.)

By forming the head A in sections, as described and shown, the several parts thereof can be the more economically constructed than would be the case if the head were of one solid piece and the adjustment and assemblage of the said parts rendered more convenient and accurate.

The inner end of each cutter-blade *b* has a rack portion *b*['], which engages an adjusting-screw *d*. The screw *d* serves to properly set the bits or cutters beyond the rubbing-surface of the head A, whereby to cause the said bits or cutters to act as rabbet-planes, and each screw *d* is rotatably mounted in a pair of

vertical brackets 2 2^a, one of which, 2, is an attached or integral part of one of the rotary head-sections and the other, 2^a, is an attached part of the incline portion of said head-section, as clearly shown in Fig. 2.

The head A is rigidly joined with the drive-shaft B by a key-pin *f* and a cap-screw *g*, and the said shaft B is journaled in the vertical bearing portion G' of the bracket or frame member G, and the said shaft B has a bevel-gear C at its upper end held to mesh with a drive-gear D on the horizontally-disposed drive-shaft E, which is journaled in the horizontal portion G² of the bracket G, the gear D and shaft E being properly joined at the outer end by a set-screw *i*, and at the inner end the shaft E is held in position by a collar F, secured by a set-screw *j* and held to abut the inner end of the part G².

H designates a supporting-bracket the lower end of which is detachably connected with the bed-plate 30 by the screw *h*², that passes through the flanges *h*³ and the grooves *h*⁴, as shown, and the vertical portion of the arm H has an outwardly-projecting bracket *h*⁵ and an elongated aperture *h*⁶, through which passes a long bolt *l*, the outer end of which screws into the vertical member G' of the bracket G, and the inner end is threaded to receive the clamp-nut *m*. A cam-disk *n* is detachably mounted on the bracket *h*⁵ and is held by a set-screw, and the said disk *n* coacts with a recess *g*⁵ in the member G and serves to adjust the height of the journal or drive-shaft carrying arm G to permit the operator to properly adjust the under surface of the cutter-head A to maintain it in a plane with the under surface of the bed-plate.

So far as described the operation of my invention is as follows: The cutters are first adjusted on the head A to properly project below the lower face of the said head A, and the arm G is adjusted vertically to bring the under face of the head A in a plane with the under side of the bed-plate, whereby to provide a smooth rubbing-surface extending the full length of the appliance. To scrape the surface, the operator moves the appliance over the surface and manipulates it the same as is done with an ordinary plane, it being understood that the cutter-head rotates and its cutters plane or scrape the surface as the appliance is manipulated, as stated, power being applied to drive-shafts by connecting the flexible drive-bolt with the shaft E in any approved manner.

When my invention is used for polishing, the head A, with its cutters, is removed, and an emery-faced mandrel or head K is substituted therefor. The head K is made fast by the key and cap-screw connection, (shown in Fig. 1,) and the said mandrel is preferably in the nature of an expansible head, and for such purpose it consists of a series of members of such correlative shape and form as to form a

conical disk the opposing faces of whose several members when in normal condition lie close against each other, and each of said sections is engaged at the upper end to a cap or ring S and a base-band *t*, into which the mandrel is expanded, and provided with a segmental threaded portion, whereby the entrance of the screw-plug *u*, (see Fig. 5,) connected with the shaft B, the said several mandrel-sections will be forced tightly against the ring 2 and the band *t* to produce a rigid rubbing or polishing head. The handle portion (shown in Fig. 1) may be detached and a long handle member substituted therefor, as shown in Figs. 2 and 5, to permit the operator using the device while in standing position and for use in such places where it is difficult to reach with a handle attachment, as is shown in Fig. 1. The long handle (indicated by J) is connected to the bed-plate, and it has tenons for engaging the flanges I' of the bed-plate I, and to permit the said handle J being readily and conveniently removed from or attached to the bed-plate a spring-latch *j*^x (see Fig. 5) is provided, the said latch forming one of the trunnions for the handle J. From the foregoing conclusion, taken in connection with the accompanying drawings, it is believed that the complete operation and the advantages of my invention will be readily understood by those skilled in the art to which it pertains. It will be noticed that means are provided for conveniently adjusting the end face of the rotary head A with the bottom of the bed-plate and for adjusting the cutters or bits of the said head. One of the advantageous features of my invention lies in the adjustable connection for such cutters or bits, which also act to properly connect the several sections of which the head A is formed.

While the construction illustrated in the drawings and heretofore described shows a preferred form of my invention, it is manifest that such construction may be further modified and the details thereof varied without departing from the principle of my invention or the scope of the appended claims.

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

1. In a portable surfacing-machine as described; the combination with the slidable main frame, a handle member fixedly secured thereto and a supplemental handle pivotally connected to the said frame, said main frame including a vertical member H; of the supplemental bracket G vertically adjustable on the bracket H, said bracket G having a horizontal and vertical bearing portion, a drive-shaft mounted in the horizontal bearing, a cutter-head-spindle bearing mounted in the vertical bearing and said bracket G, a cam device for controlling the vertical adjustment of the bracket G, means for fixedly holding the said bracket G to its adjustments,

a cutter-head and a series of cutters mounted thereon with their cutting edges projected through the base of said cutter-head as set forth.

5 2. In a surfacing-machine as described; a cutter-head comprising a body formed of a series of segments each having circumferential and downwardly inclined surfaces, each terminating in a bit-slot, and a cutter-blade
10 adjustably mounted on each inclined surface with its bit end projected through the said slot, an annular rim surrounding the bit ends of the cutters and provided with shaving-outlets substantially as shown and described.

15 3. In a surfacing-machine as described; a cutter-head comprising a segmental body having a smooth bottom surface and a series of downwardly and circumferentially-inclined top surfaces each of which terminates at a
20 bit-aperture, an annular rim surrounding said apertures and provided with outlets for the shavings and a series of circumferentially-disposed cutters, one for each incline top section, said cutters having their cutting ends
25 projected through the bit-apertures and a means mounted on the cutter-head for adjusting said cutters substantially as shown and described.

30 4. In a portable surfacing-machine as described; the combination of the main frame including the bracket H provided with an outwardly-extended member h^5 , and a horizontally-rotatable cam n , mounted on the member h^5 ; of the bracket G said bracket
35 having vertical movement on member H, a cutter-head the spindle of which is journaled in the bracket G, said bracket G having a recess in its outer face for coacting with the member h^5 and the cam n , a means for im-

parting motion to the cutter-head spindle 40 mounted on the main frame, all being arranged substantially as shown and described.

5. In a surfacing-machine as described, a cutter-head comprising a body having a smooth bottom surface and a series of down- 45 wardly and circumferentially inclined top surfaces each of which terminates at a bit-aperture and an annular rim surrounding said body and provided with outlets for the shavings and a series of circumferentially-dis- 50 posed cutters one for each inclined top section, said cutters having their cutting ends projected through the bit-apertures and a means mounted on the cutter-head for adjusting said cutters, said means including a 55 worm-screw for meshing with the edge of the cutters for the purposes specified.

6. In a surfacing-machine as described, a cutter-head comprising a body having a smooth bottom surface and a series of down- 60 wardly and circumferentially inclined top surfaces each of which terminates in a bit-aperture, and an annular rim surrounding said body and provided with outlets for the shavings and a series of circumferentially- 65 disposed cutters, one for each inclined top section, said cutters having serrated portions and having their cutting ends projected through the bit-apertures, means mounted on the cutter-head for adjusting said cutters, said 70 means including a worm-screw for cooperating with the serrated portions of the cutters, said worm-screws being mounted upon the cutter-body for the purposes specified.

NELSON HUGHES.

Witnesses:

A. T. LEWIS,
MARK O'NEILL.