Oct. 7, 1930. J. INWALD ET AL 1,777,726

STONE POLISHING MACHINE

Filed Dec. 29, 1926 3 Sheets-Sheet 1

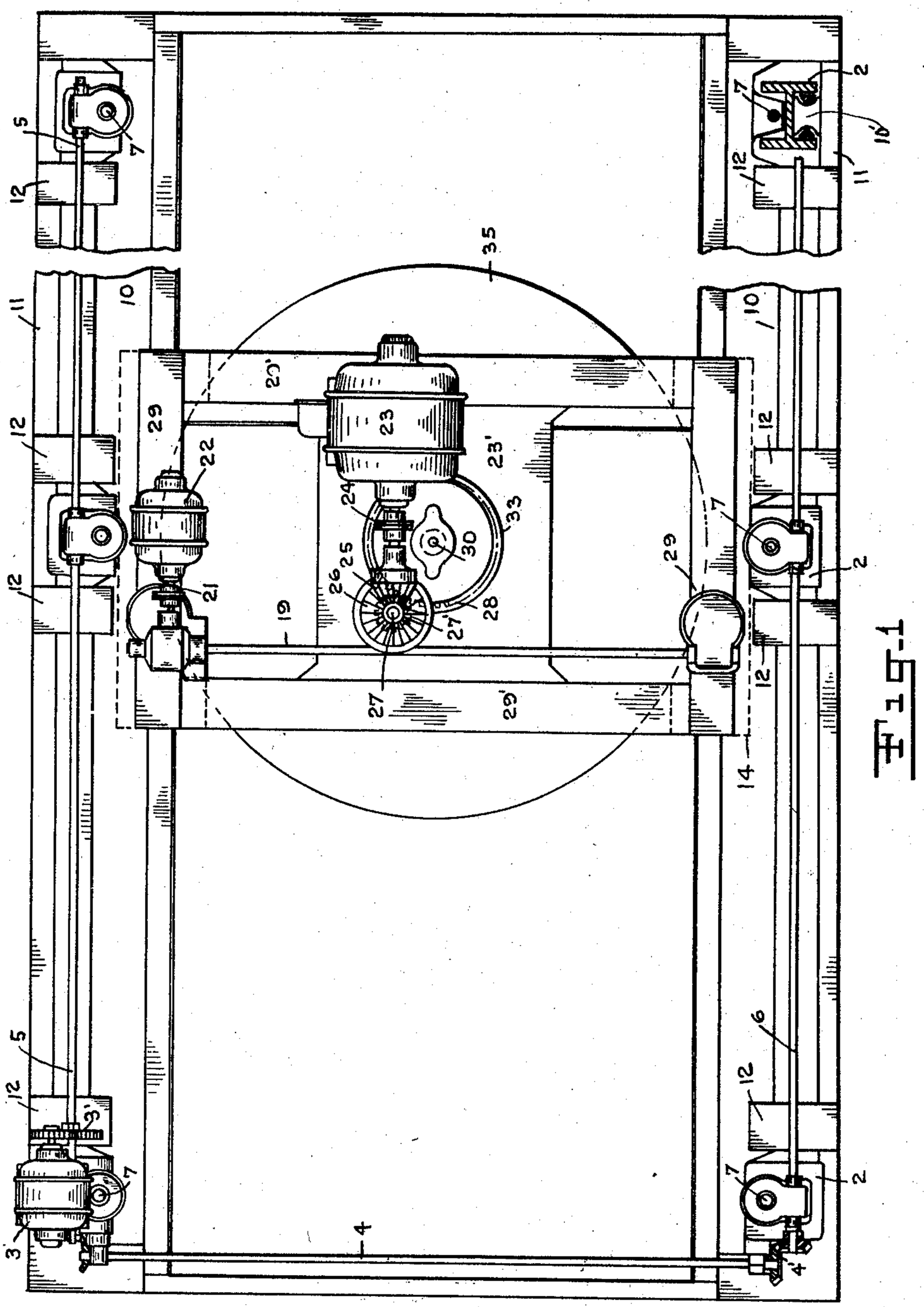

FIG. 1

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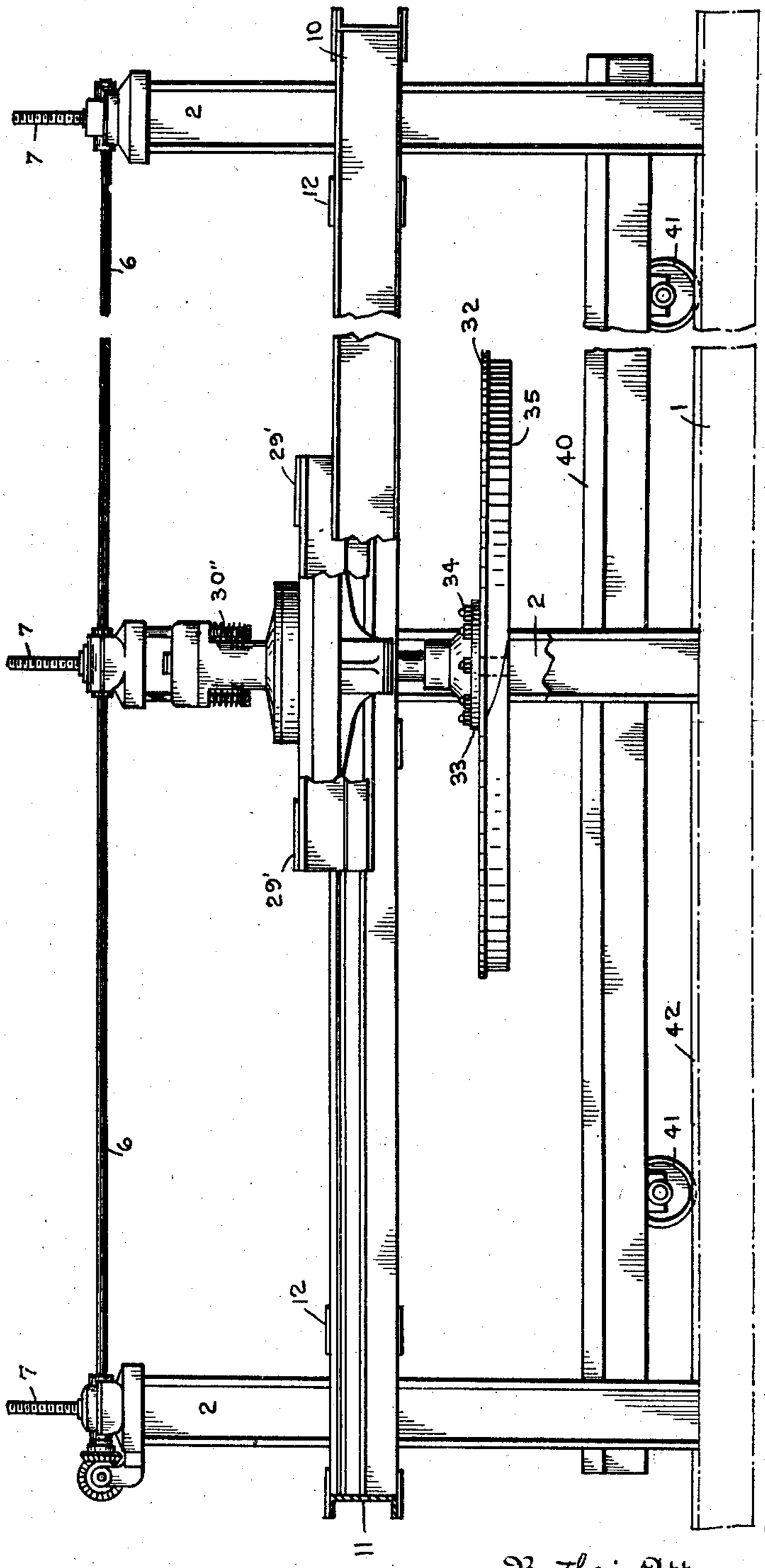

FIG-2

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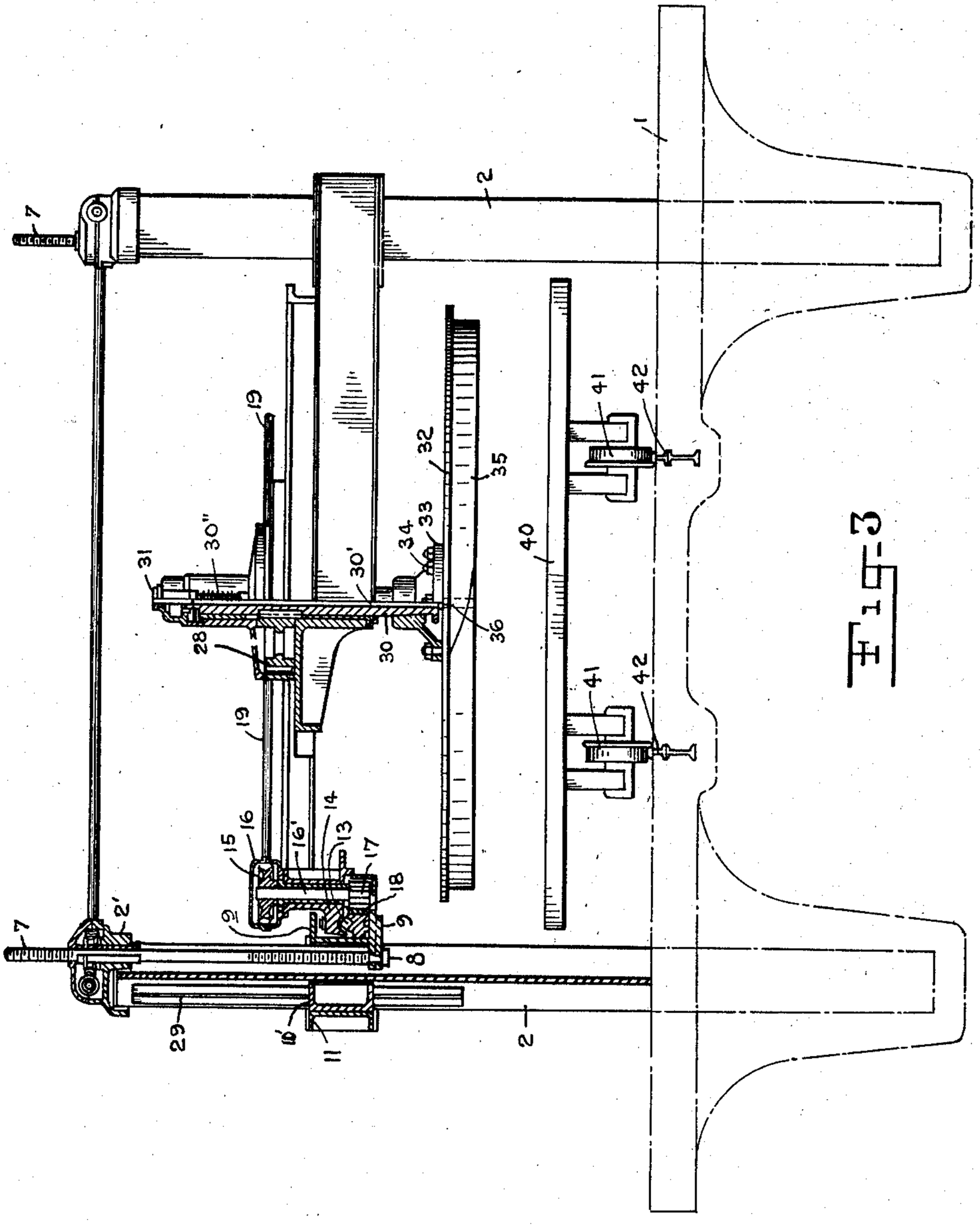

FIG-3

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Patented Oct. 7, 1930 1,777,726

UNITED STATES PATENT OFFICE

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STONE-POLISHING MACHINE

Application filed December 29, 1926. Serial No. 157,632.

The improvements relate to machines for rubbing, grinding and polishing stone and the like, and their objects are primarily to increase the strength efficiency and simplify and render more effective the operation of the same, as will appear more fully by the following description. The said improvements are illustrated in the accompanying drawings, referred to herein.

In the said drawings, Fig. 1 is a plan of a grinding, surfacing or polishing machine embodying the improvements;

Fig. 2 is a side elevation of the same; and

Fig. 3 is an end elevation of the same with some of the parts shown in vertical section.

The machine is mounted on a floor or base 1, preferably of concrete and having a smooth surface, and is so constructed and arranged that a clear floor space without obstruction to washing is provided. The uprights 2 are embedded in the base, and consist of rigid H beams, six in number, forming the corner posts and intermediate posts of the machine. On one of these posts is mounted a motor 3 connected by suitable gears 3′ with raising and lowering shafts 5 and 6, and by means of other gears 4′ to a similar shaft on the opposite side. These shafts are provided with gears connecting them operatively with the raising and lowering screws 7, one supported on each post by a member 2′, by which the machine is raised and lowered, all of the screws being operated simultaneously. The screws 7 are connected at their lower ends with the frame of the machine 9 by having their lower ends passed therethrough and provided with a head 8, the end of the screw passing through the frame being of reduced diameter, so that the screw can have no vertical movement with respect to the frame. The said frame has a sliding block 10′ with grooves engaged by V shaped guides or slides 29 on the posts 2. The blocks 10′ are secured to the channels 11 forming the outer horizontal frame and connected by plates 11 to the inner horizontal H beams 10 forming the inner part of the frame.

The longitudinal movement of the surfacing or polishing machine is provided for by the carriage track 13 mounted on the frame, of rectangular cross section, and reversible to take up wear, and the grooved casting 14 sliding thereon. A gear 15 in a case 16 adapted to be packed with grease is connected by this shaft 16′ with a pinion 17 in mesh with the rack 18 fixed to the frame, and this gear is driven by means of a shaft 19 operated by a motor 22 through any suitable connecting gears. The shaft is connected with the motor through suitable gears in a gear grease case 16 and a shaft with coupling 21.

In this manner provision is made for the longitudinal movement of the polishing or surfacing machine over the face of the bed on which the stone to be surfaced is supported. The said stone is supported on a carriage comprising the table 40 mounted on flanged wheels 41, which runs upon tracks 42 embedded in the concrete floor. This permits the work to be removed from the surfacing machine, and replaced by other work carried by the same or another truck. During the polishing operation, however, the work is not ordinarily moved, but instead the rubbing or polishing device is moved longitudinally over it by the means just described.

Mechanism for bringing about the cross travel of the polishing device may be employed if desired, but such means has not been shown, because it is not always essential in the present apparatus, and because such means is well known in the art. In the present machine the rubbing disk is made substantially the full width of the bed, so as to cover it laterally, thereby eliminating the necessity for crosswise travel in ordinary use. This is made possible by the strong and durable construction of the entire machine, comprising the six posts or uprights of H-beam construction, the horizontal frame connecting the uprights composed of combined H-beams and channels connected by plates (10, 11, 12) and a relatively high power motor and more substantial power transmitting and rubbing disk rotating means. In this manner it is possible to use a disk 10 feet instead of six feet in diameter, and by arranging the filler of grinding or polishing material so as to compensate properly for the increased speed toward the periphery, in

well known manner, to grind or polish the entire surface of the stone or other work without moving the disk laterally to reach its side edges.

Means for rotating the rubbing disk carrying the polishing or grinding material are provided in the motor 23 mounted on the laterally slidable plate 23′ on the traveling frame composed of longitudinal members 29 and cross members 29′, upon which the motor 22 is also mounted, the coupled motor shaft 24, bevel pinion 25 on the end thereof meshing with bevel gear 26 on shaft 27, and through pinion 27′ on said shaft with the large gear 28 on shaft 30. The shaft or spindle 30 carries the hub 33 secured to the polishing wheel or rubbing disk frame 32 by means of threaded studs 34 on the latter extending through the hub and secured by means of nuts, and to the underside of this wheel or frame "fillers" of polishing or grinding material 35, of any desired form, are secured.

The shaft 30 has a central bore 30′ extending therethrough, and at its top a connection 31 for a swivel coupling for a flexible liquid pipe is provided. The liquid channel is open at the bottom, and a large channel 36 extending through the polishing disk forms a continuation of the liquid conduit so that liquid for wetting the surface of the stone and the polishing material will pass therethrough and be distributed over the surfaces of these two elements radially throughout the entire rubbing surface. In this manner liquid is supplied to and distributed throughout the rubbing surfaces in the desired amount—being controlled in any suitable manner—and without waste, and without causing splashing on the other parts of the machine. The springs 30″ give the polishing disk a resilient or yielding contact with the work and gauge pressure.

What we claim is:

1. In a machine of the character described, uprights consisting of posts of substantially H-beam cross section in combination with a rigid, vertically movable horizontal frame suspended thereon, said frame comprising flanged members extending between the flanges of said uprights, a longitudinally movable frame on said horizontal frame, a motor carried by the latter and a polishing wheel having a diameter substantially the width of the enclosure defined by said posts, suspended from said second named frame and operatively connected with said motor.

2. In a machine of the character described, uprights consisting of posts in combination with a rigid, vertically movable horizontal frame adjustably suspended thereon, said frame comprising a channel beam forming a housing for traction elements, a track member and a rack member mounted within said channel beam, a longitudinally movable frame on said horizontal frame, having a pinion arranged in mesh with said rack and a grooved casting disposed within said channel beam and slidable on said track, a motor mounted on said second named frame, for actuating said pinion, a second motor carried by said second named frame and a polishing wheel suspended therefrom and operatively connected with said second motor.

3. A polishing machine comprising fixed uprights, a vertically movable horizontal frame mounted thereon, said frame comprising a beam forming a housing, a track member and a rack member mounted within said beam, a longitudinally movable frame on said horizontal frame, having a pinion meshing with said rack and a member disposed within said beam and slidably engaging said track, means mounted on said second frame for actuating said pinion, a polishing device suspended from said second frame and means on said frame for actuating said device.

4. A polishing machine comprising fixed H-shaped uprights, each having oppositely extending sets of parallel flanges, a vertical screw threaded member mounted between the flanges of one set of flanges on each upright, a vertically movable horizontal frame having extensions extending between and guided by the flanges of the other set of flanges on said uprights, and extensions having screw threaded connections with said screw threaded members, a longitudinally movable carriage mounted on said horizontal frame, means for actuating said screw threaded members for causing vertical movement of said horizontal frame, means for longitudinally moving said carriage, a polishing wheel suspended from said carriage, and means on said last carriage for rotating said wheel.

Witness our hands this 21st day of December, at New York, in the county of New York and State of New York.

JOSEPH INWALD.
ISIDORE HASKEL.