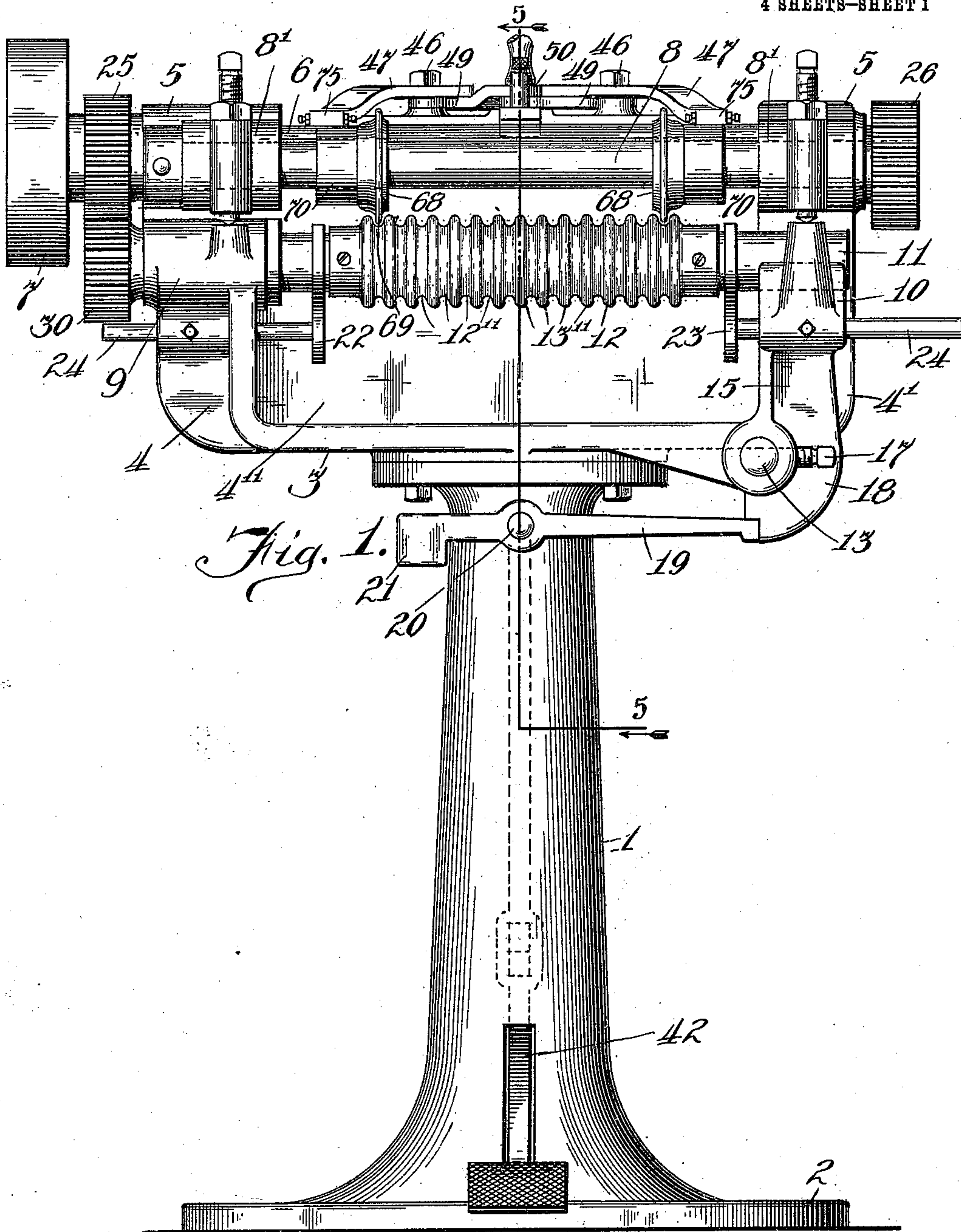


H. C. H. WALSH.
METAL GREASING MACHINE.
APPLICATION FILED APR. 19, 1909.

975,185.

Patented Nov. 8, 1910.

4 SHEETS-SHEET 1



Witnesses
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Low Force

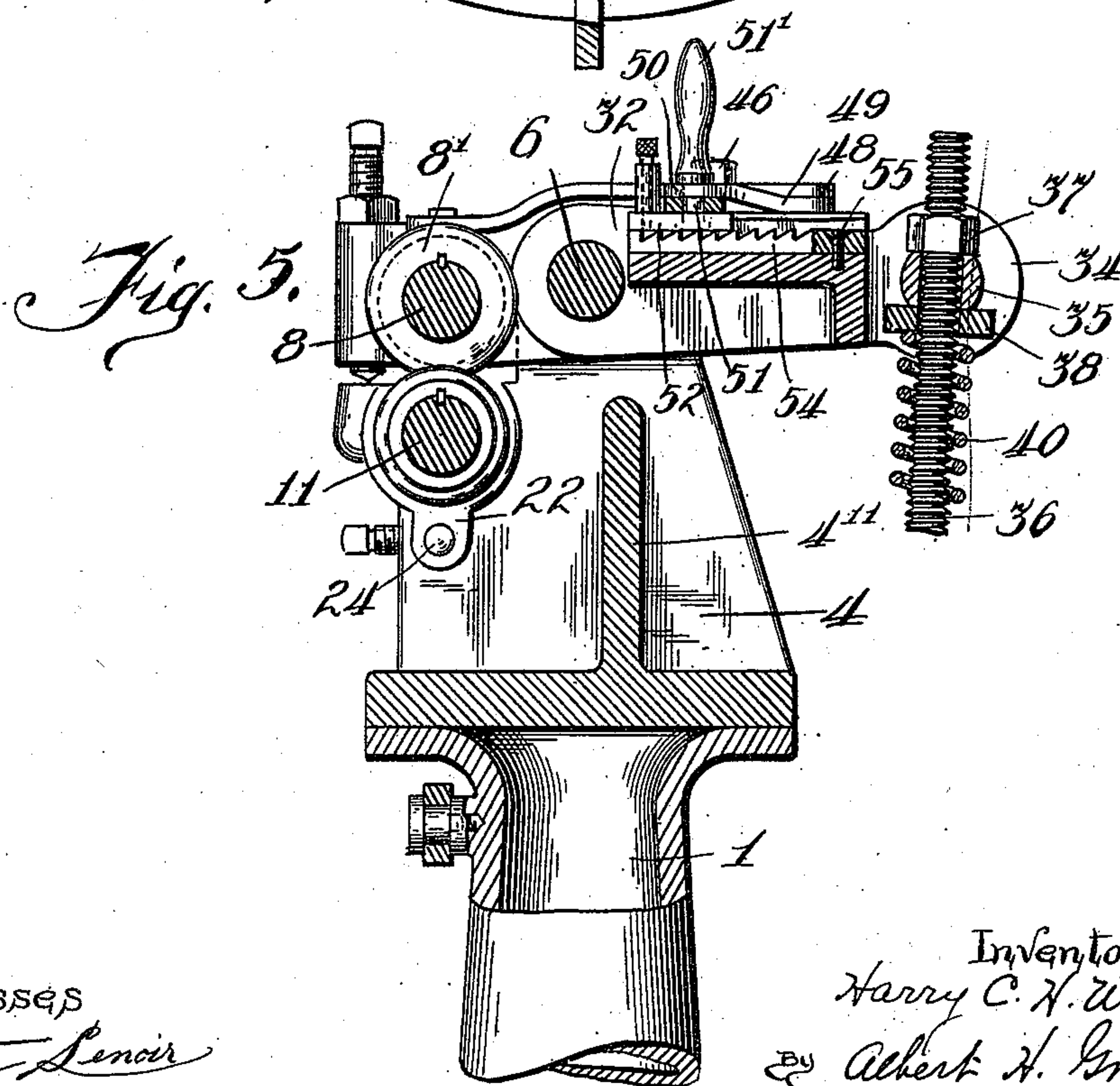
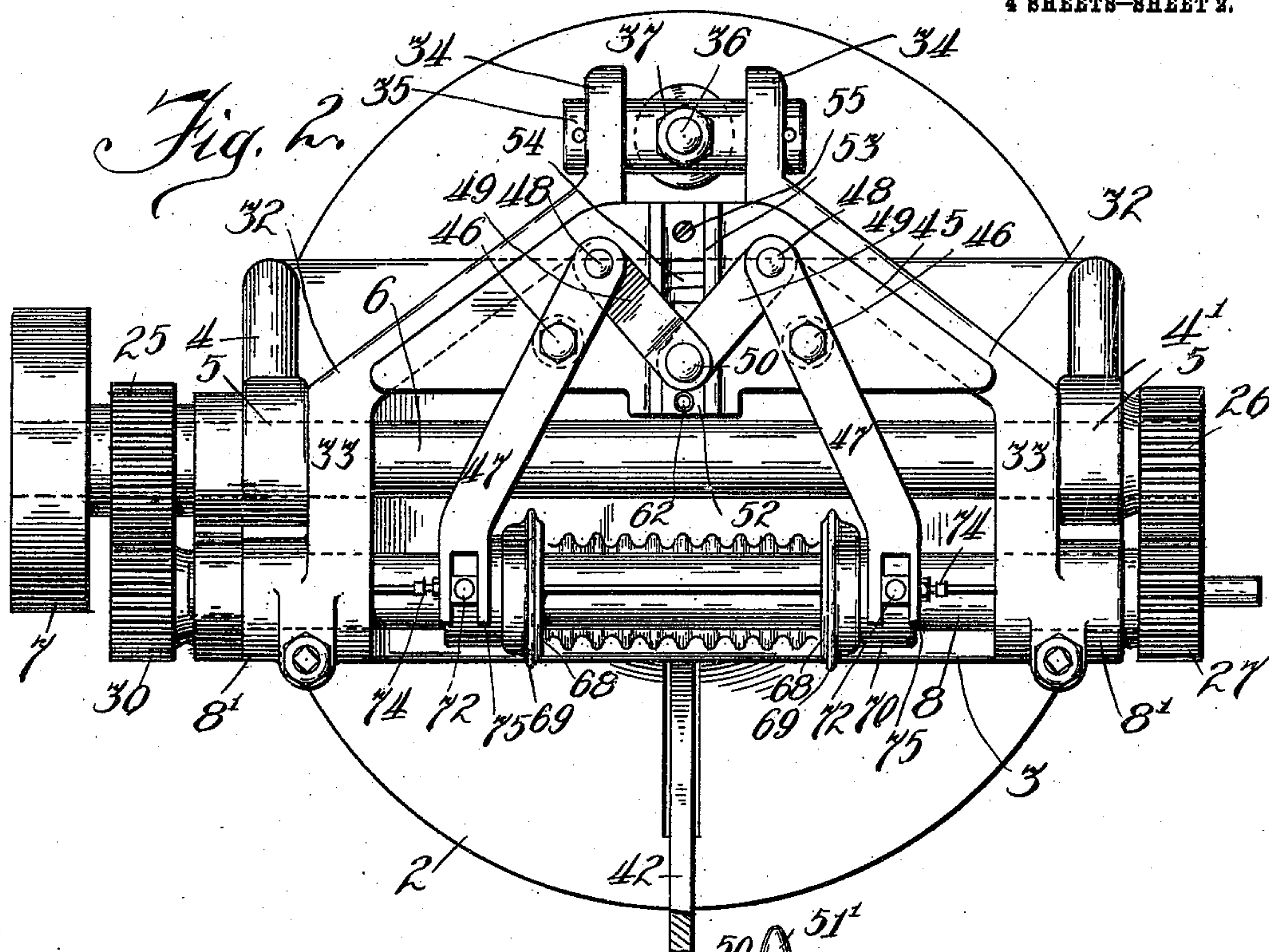
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4 SHEETS—SHEET 2.

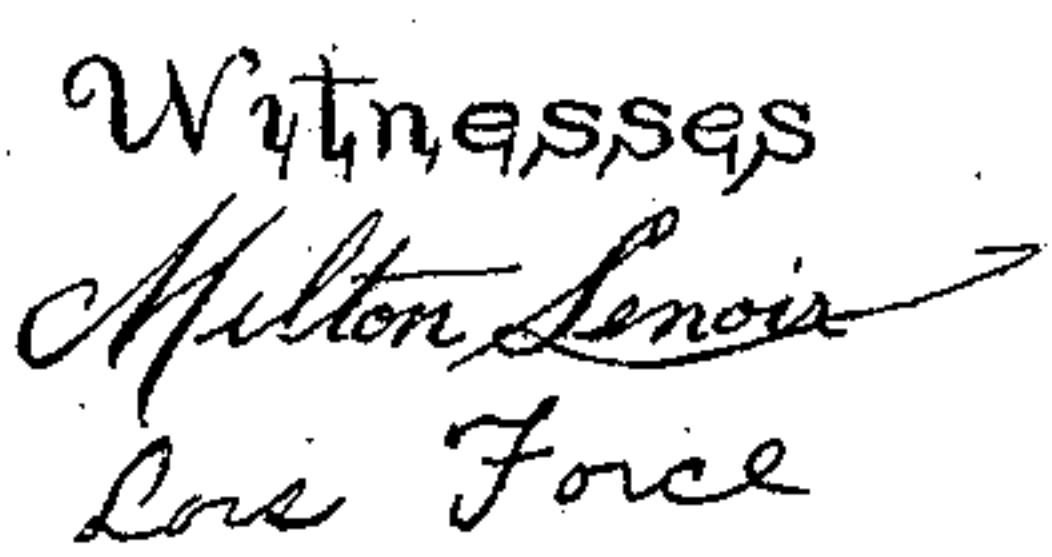


Witnesses
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975,185.

4 SHEETS—SHEET 3.



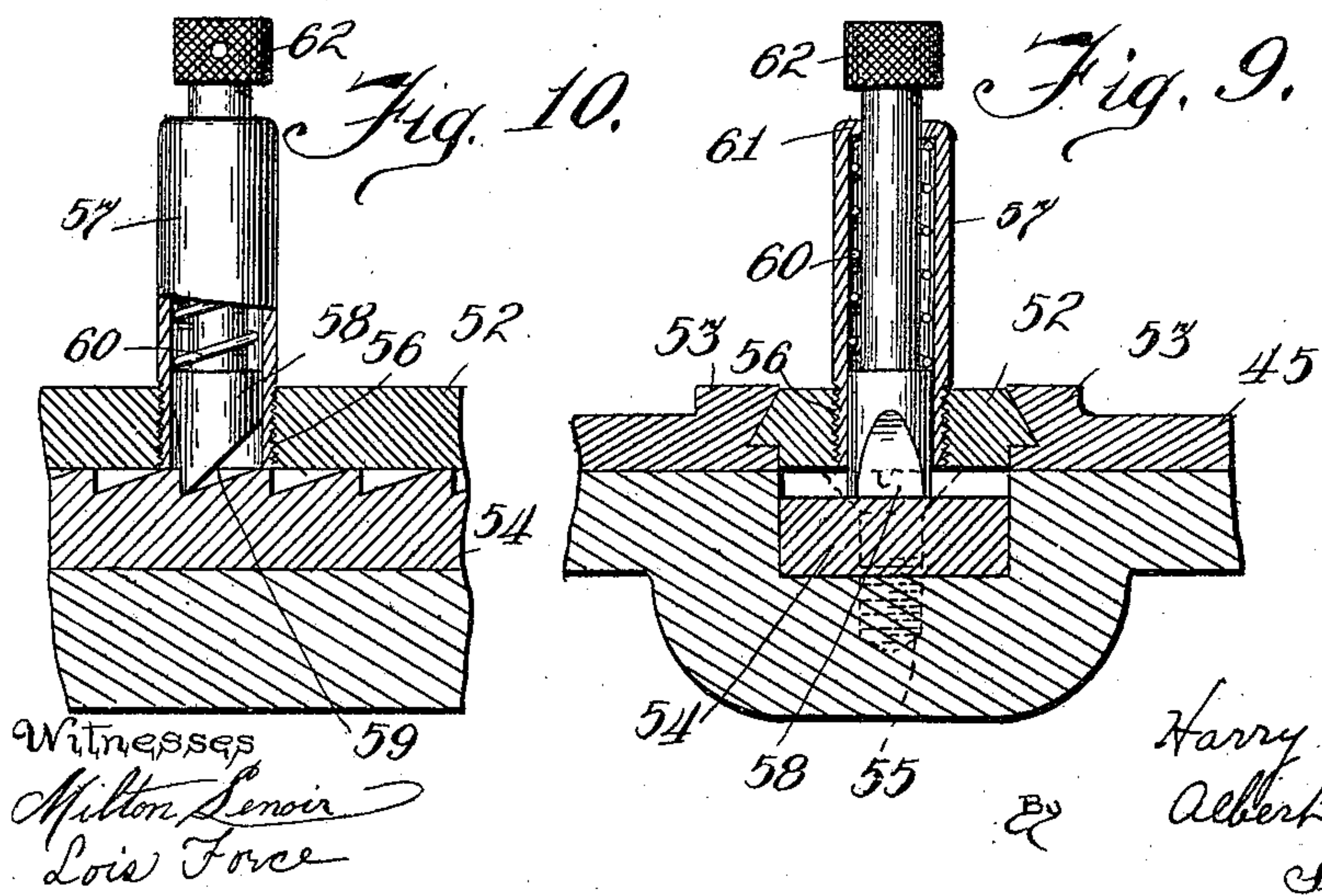
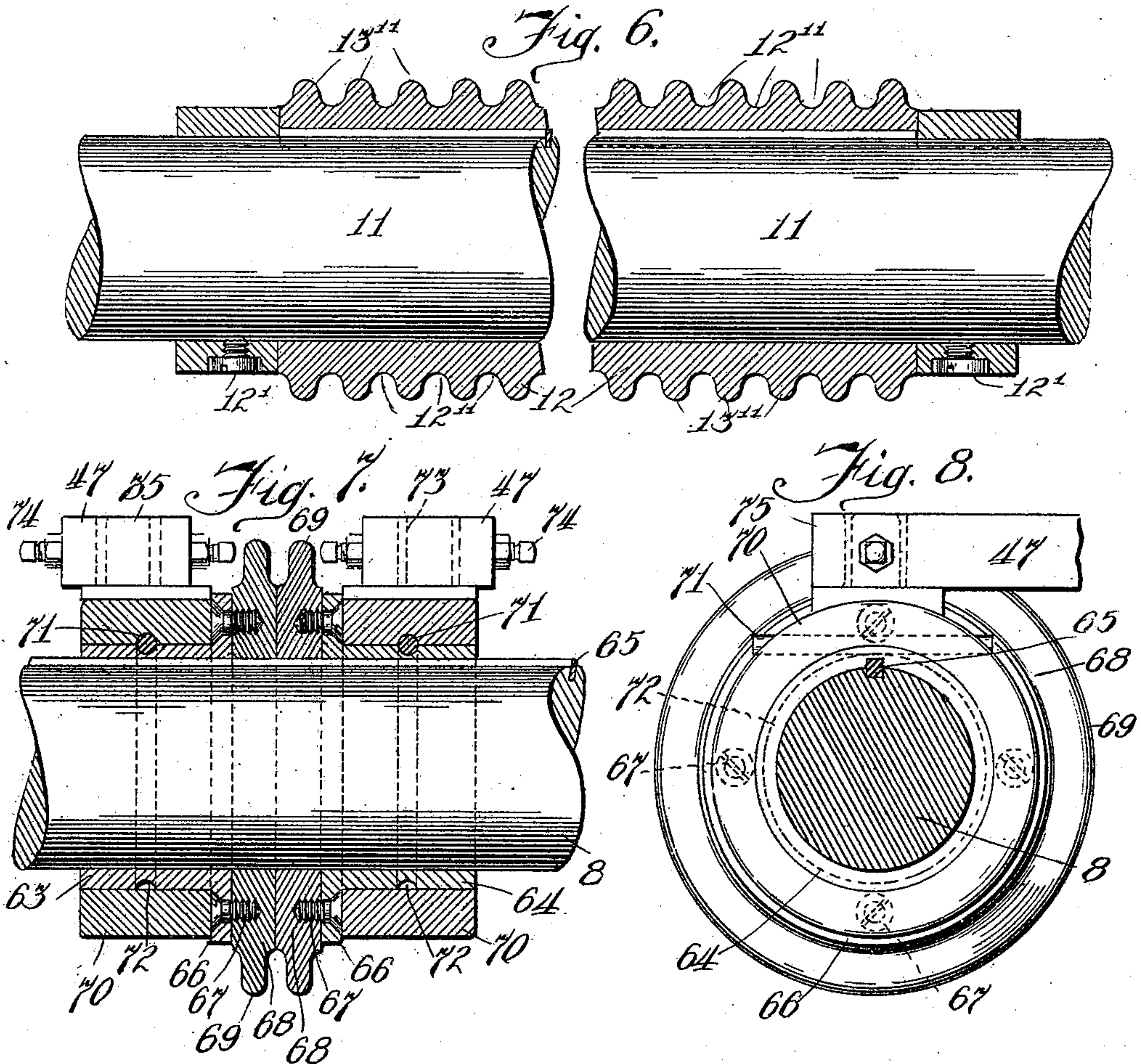
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

HARRY C. H. WALSH, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO A. A. KINNE,
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METAL-CREASING MACHINE.

975,185.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed April 19, 1909. Serial No. 490,680.

To all whom it may concern:

Be it known that I, HARRY C. H. WALSH, a citizen of the United States, residing in the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Metal-Creasing Machines, of which the following is a specification.

This invention relates to improvements in metal creasing machines and refers more particularly to machines for creasing or corrugating sheet metal blanks from which pipe elbows may be formed.

Among the salient objects of the invention are to provide a construction in which the creasing former and associated dies are keyed or splined to a pair of constantly driven shafts, and thrown into operative engagement with each other by means of simple treadle mechanism; to provide a construction in which the creasing dies are yoked together and adjustably mounted relative to a former in order to travel over the blank in performing the creasing operations; to provide a construction in which the former may be readily inserted in place upon its shaft or removed therefrom, thus permitting the use of various styles of formers with a single machine; to provide novel mechanism for shifting or adjusting the creasing dies relative to the former; to provide improvements in the details of arrangement and construction of the various parts of the machine and in general to provide an improved construction of the character referred to.

The invention consists in the matters hereinafter described and more particularly pointed out in the appended claims.

In the drawings Figure 1 is a side elevation of my invention with the parts shown in operative position. Fig. 2 is a top plan view of the same. Fig. 3 is an end elevation taken on the right hand side of Fig. 1. Fig. 4 is a fragmentary end elevation of the opposite side of the machine. Fig. 5 is a fragmentary vertical sectional view taken approximately on the line 5-5 of Fig. 1 and looking in the direction of the arrows. Fig. 6 is an enlarged detail view showing the manner of securing the former to its shaft. Fig. 7 is a detail sectional view showing the manner of connecting the dies to the main driving shaft. Fig. 8 is an end elevation of the view shown in Fig. 7.

Figs. 9 and 10 are detail sectional views of the step-by-step mechanism by which the dies are shifted.

Referring to the drawings 1 designates the main standard member having a base support 2 and carrying at its upper end a supporting casting or bed plate 3 provided at either end with up-standing pedestal members 4', 4' respectively. Preferably these pedestal members are connected together by a transversely extending strengthening web 4''.

In suitable bearings 5, 5 carried by the pedestal members is rotatably journaled the main driving shaft 6 to one end of which is connected the main driving pulley 7. Directly in front of this main driving shaft is journaled a generally similar shaft 8 hereinafter designated the die shaft. The bearing supports 8' of this shaft are pivotally supported to the main driving shaft 6 by means of bracket arms 32 carrying collars 33 which are loosely mounted on the main shaft as shown in Fig. 2. The rear end of the bracket arms 32 converge inwardly as shown and terminate in parallel extensions 34 which are connected together by the journal pin 35. A threaded rod 36 extends loosely through a transverse aperture formed in the journal pin 35 and is locked to the latter by means of a nut 37. Directly beneath the pin 35 is loosely mounted a washer 38, and between this washer and confining nuts 39 carried by the lower threaded end of the rod 36 is interposed a coiled expansion spring 40 for a purpose hereinafter described. To the lower end of the rod 36 is pivotally connected as shown at 41 a foot treadle 42. The weight of the arms 32 and connected parts is such as to swing the shaft 8 upwardly by gravity thus throwing the treadle upwardly. The arrangement is such that the die members hereinafter described carried by the shaft 8 are normally thrown upwardly out of engagement with the former.

Directly beneath the shaft 8 in suitable bearings 9 and 10 is journaled a shaft 11 hereinafter designated the former-shaft and carrying the former 12. The bearing support 9 for this shaft is rigid with the pedestal member 4 but its other bearing support 10 is pivotally connected to the pedestal 4' in order that the former 12 may be removed from the shaft if desired. To this

end a journal stud 13 is rigidly seated in the main casting 3 and upon this journal stud is pivotally mounted by means of a bearing 14 the bracket member 15 which carries at its upper end the semi-circular bearing 10. The bearing 14 is prevented from slipping off the stud by means of a collar 16 keyed to the stud by means of a key pin 17. At its outer face the bracket member 15 is provided with a web 18 which extends downwardly and is engaged by a locking lever 19 pivotally connected at 20 to the main standard 1. In order to hold this lever in locking engagement with the web the former is weighted at its opposite end as shown at 21. To remove the former 12 it is only necessary to lift up the weighted end of the lever 19 so that the opposite end swings out of engagement with the web 18 whereupon the movable die may be swung on its pivot, out of engagement with the shaft. Preferably the former is adjusted between forked gages 22, 23, movably mounted in the pedestal member 4 and bracket 15 respectively by means of sliding rods 24.

The shafts above referred to are driven in the following manner: Upon the respective ends of the main shaft 6 are keyed gears 25, 26 respectively, the latter of which meshes with a similar gear 27 keyed to the adjacent end of the die shaft 8. Beneath the opposite end of the main shaft 6 is rigidly seated a journal stud 28 upon which is loosely mounted a gear 29 in mesh with gear 25. This latter gear in turn meshes with a similar gear 30 carried by the former-shaft 11. From the foregoing it will be seen that the various shafts are each operatively connected to the main driving shaft which is constantly rotated by means of the driving pulley 7.

The former 12 consists essentially of a metal sleeve the ends of which are keyed as shown at 12' to the former-shaft 11, and is provided with a series of creases 12'' formed between spaced apart ribs 13''.

Referring now to the dies which cooperate with the former to crease the metal blank, between the arms 33 heretofore described, is secured a supporting plate 45 upon which are pivotally mounted at 46, 46 a pair of shifting levers 47. Each of these levers is connected at its inner end as shown at 48 to a toggle link 49. These links are in turn pivotally connected as shown at 50 to a pivot stud 51, the lower end of which is seated in a block 52 mounted to slide in a guide way 53 formed on the upper face of the supporting plate 45. In the bottom of this guide way is fixedly seated by means of screws 51 a rack bar 54 over the face of which the block 52 slides. One end of the latter is provided with a screw threaded aperture 56 to which is secured a tubular socket member 57 in which is seated a de-

tent or pawl 58. The lower end of this pawl is beveled as shown at 59 in order to engage the teeth of the rack bar 54, and is normally forced into engagement with the latter by means of a coiled spring 60 seated between the shoulder formed upon the pawl and a flange 61 at the upper end of the socket member 57. The upper end of this pawl is provided with a thumb nut 62 by which it may be lifted out of engagement with the tooth against the action of the coiled spring 60.

Upon the die shaft 8 is movably splined a pair of sleeves 63, 64 by means of a feather 65. The inner ends of these sleeves are provided with an annular outstanding flange 66 and to which is secured by means of suitable screws 67 the dies proper designated 68. As seen more clearly in Fig. 7 each of these dies is provided at its periphery with a rib 69 which is adapted to enter the creases 12'' upon the former 12. Upon the respective sleeves 63, 64 is mounted a collar 70 by means of a pin 71 seated in the inner face of the collar 70 and engaging a groove 72 extending circumferentially of the corresponding sleeve as seen more clearly in Fig. 8. Each of these collars 70 is provided at its upper side with a lug upon which is seated a squared block 73. To each of these blocks 73 is connected by screws 74 forked extensions 75 of the shifting levers 47.

From the foregoing it will be seen that the dies 68 are so connected to the shifting levers as to permit the dies to rotate with the die shafts 8. In order to shift the dies over the face of the former 12 the pawl is stepped over the face of the rack bar by means of a handle 51' connected to the stud 51. The dies will, of course, be automatically locked in whatever position they are left by means of the cooperative engagement between the rack-bar 54 and the spring actuated locking pawl 58.

The operation of the machine may be briefly described as follows: In order to insert a blank upon the former 12, the lever 19 is operated to release the bearing 10, whereupon the former may be removed from said bearing and the blank inserted. A former shaft is then adjusted in its bearing and the creasing dies shifted to the desired position by means of the handle 51'. The treadle may then be forced downwardly until the dies engage the former. Succeeding creases are formed in the blank by alternately shifting the dies and operating the treadle. The machine is particularly adapted for corrugating metal tubes of various kinds. It may be noted that it is immaterial whether the dies first crease the ends of the blank or the middle.

I claim as my invention:

1. In a metal creasing machine, the combination with a rotating former member

adapted to receive a tubular blank, of a
bodily shiftable creasing die member, coop-
erating with the former, means for shifting
the die over the face of former, and means
5 for moving one of said members bodily to
and from the other.

2. In a metal creasing machine, the com-
bination with a rotating former, of a creas-
ing die cooperating with said former, means
10 for shifting the die over the face of the lat-
ter, and leverage mechanism for moving said
die to and from the former.

3. In a creasing machine, the combination
with a rotating former, of a creasing die co-
operating therewith, step-by-step mecha-
nism for shifting the die over the face of
the former, and leverage mechanism for
moving said die bodily to and from the
former.

20 4. In a metal creasing machine, the com-

bination with a main frame, of a pair of
shafts journaled therein, a former carried
by one of said shafts, a creasing die carried
by the other, leverage mechanism for mov-
ing one of said shafts bodily to and from 25
the other, and step-by-step mechanism for
shifting the die over the face of the former.

5. In a metal creasing machine, the com-
bination with a main frame, of a pair of
shafts journaled therein, a former carried 30
by one of said shafts, a pair of creasing dies
carried by the other, step-by-step mechanism
for shifting the creasing dies over the face
of the former, and leverage mechanism op-
eratively connecting the creasing dies and 35
step-by-step mechanism.

HARRY C. H. WALSH.

Witnesses:

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LOIS FORCE.